

The Mining Journal AND ATMOSPHERIC RAILWAY GAZETTE,

FORMING A COMPLETE RECORD OF THE PROCEEDINGS OF ALL PUBLIC COMPANIES.

No. 550.—VOL. XVI.]

London: Saturday, March 7, 1846.

[PRICE 6D.

TO IRONFOUNDERS, &c.—HELEN IRON-WORKS, near BERWICK-UPON-TWEED.—TO BE SOLD, BY PUBLIC AUCTION (unless disposed of by private bargain, of which due notice will be given), all those well-known and newly-erected WORKS (without reserve), on Tuesday, the 10th March next, at Two o'clock in the afternoon, in the King's Arms Hotel, Berwick-upon-Tweed, and which, to secure competition, and wind up the affairs of the concern, will be put up at the

UNPRECEDENTEDLY LOW SUM OF £2700.

These works have been built in the most solid and substantial manner, regardless of expense, and consist of large and lofty moulding shops, furnished with numerous cranes, two cupolas, capable of melting 8 to 10 tons an hour; two steam-engines, of 6 and 12-horse power; large boring-mill, and self-acting slide lathe, 24-inch headstocks, and 24-ft. long; several other lathes; driving and screw-cutting machines; saw and loam mills, all driven by machinery. Three large fire-proof stoves; a railway, with inclined planes and platform, upon which the materials for the furnaces are drawn by steam-power; dressing shops; long sheds, for holding boxes, &c. Three newly-erected coke ovens, and ample supplies of water, which is carried through the premises in pipes.

It is not within the compass of an advertisement to point out the advantages which these works have over others in the country, for supplying the local, London, and other markets with castings, for which, at no other period, has there been so great a demand, and which is certain to be still further increased; they could be put into full operation in two or three weeks, being in perfect working order—a better opportunity having been

SELDOM PRESENTED TO THE IRONFOUNDER OR CAPITALIST

desirous of engaging in this branch of manufacture.

ON THE FOLLOWING DAYS,

The BOXES, PATTERNS, MOULDERS' TOOLS, including all the IMPLEMENTS and MATERIALS used in an iron foundry, with a stock of CAST-IRON GOODS,

WILL BE SOLD, BY AUCTION.

These consist of several hundred tons of moulding boxes, or flasks and patterns used for making rain, gas, and water pipes, girders, tanks, steam-engine, and other machinery castings; pots, chests, house girders, round and square ovens; stove metal, and other castings sold in the London market; gun carriages, platforms, and other articles required by the Board of Ordnance; gas apparatus and retorts, used by London Gas Companies; girders, columns, railway bars, and an immense variety of others, too numerous to mention.

ALSO, ABOUT SIXTY TONS CORE BARRELS.

For iron, gas, water, and hot-water pipes, &c., of malleable and cast-iron; together with the MOULDERS' TOOLS, consisting of crane and hand ladles, slings, wrought and cast-iron beams, chains, shovels, &c.

The patterns will be found of the most valuable description, being almost all new; the castings from which have been found correct, and a great part suitable for the London market; they have been prepared with the greatest care and accuracy, at vast expense, from drawings and models furnished by engineers, and by some of the first houses in the iron trade in London.

The Sale to commence at the Works each day at Twelve o'clock.

Plans of the Works, and catalogues of the boxes, patterns, &c., may be had, by applying to Robert Guthrie, Fenchurch Chambers, London.

D. Macbeth, Berwick.

Coxwell and Croser, Newcastle-upon-Tyne.

Banks and M'Kenzie, Glasgow.

Joseph Hubback, Liverpool.

J. B. Galtie, Edinburgh.

MINE MATERIALS FOR SALE.—Mr. NICH. TREVENA has received instructions to SELL, BY AUCTION, at EAST POOL MINE, in the parish of Illogan, on Tuesday, the 10th of March, at Eleven o'clock in the forenoon, the under-mentioned SPARE MINE MATERIALS:

1 9-foot 18-inch pump	2 10-foot 9-inch windpump
1 9-foot 14-inch ditto	1 6-foot 12-inch ditto
1 9-foot 13-inch ditto	H-piece and top-piece
12 6-foot 12-inch ditto	A capstan and shears
13 5-foot 9-inch ditto	10-inch capstan rope—about 100 fathoms in length
4 4-foot 9-inch ditto	2 horse-whims
5 9-foot 7-inch ditto	A boiler tube—a balance-bob
4 10-foot 8-inch working barrels	Lot of old scrap-iron
2 6-foot 9-inch door-pieces	Ditto cast-iron
1 6-inch H-piece and top-piece, with stuffing-box and glands to fit.	Ditto brass

The auctioneer begs to call the attention of mine agents and others to the above materials, a large portion of which are nearly new.—Dated Feb. 18, 1846.

WHEAL LOPEZ MINE, BICKLEIGH.—VALUABLE and EXTENSIVE ASSORTMENT OF MINING MATERIALS.—TO BE SOLD, BY AUCTION, by D. H. HAINSELLIN, on Tuesday, the 10th March, 1846, and following days at WHEAL LOPEZ MINE, Bickleigh, seven miles from Plymouth, all the VALUABLE AND EXTENSIVE ASSORTMENT OF MATERIALS,

lately used in working the said mine.

Comprising a capital 40-ft. water-wheel, with 3 ft. 6 in. breast; a superior 39-ft. water-wheel, 6 ft. breast; with iron ring; an excellent water-wheel 9 ft. 6 in. diameter and 9 ft. breast, with drawing machine, &c.; a crushing machine and floor; a set of 3 head stamps and wheel; iron windlass, capstan and beam; shears and pulleys; several hundred feet of flat and round rope; about 60 tons of superior iron, in bishop's heads; bob gimbals; chairs; staples; strapping plates; rolls; rails and railway saddles; stuffing boxes and gland; H-pieces and clacks; pulleys; bucket rods; angle bob; logheaders; cramps; cylinder case; sweeps; bob chains, and rod plates; rod loops; pulleys; round and square rods; strapping bands; rod plates; plain pins bolts; castings; rings, &c.; SEVERAL LIFTS OF SUPERIOR 17 in., 15 in., and 10 in. PUMPS; door pieces; wind boxes; working barrels; clacks; matching pieces; several wood pumps; excellent oak and other timber; launders; planks; ladders; rods of machine houses; saw pit; carpenter's bench; blacksmith's bellows and forges; anvils; vises; screw plates; screwing stock; hammers and other tools; iron kibbles; beam and scales, with stand and weights; triangle and blocks; miner's tools; new shovels; a superior THEODOLITE; six bags of nails; 3 cwt. gunpowder; leather; old rope; grinding stones; and a useful assortment of other articles calculated for mining purposes.

The whole of the above being in excellent condition, is strongly recommended to mining agents and others, who may inspect the same six days before the sale, or application to Capt. Edwards at the mine, of whom catalogues may be had; of the auctioneer, No. 1, St. Aubyn-street, Devonport, or of Mr. Roswarva, Sussex-street, Plymouth.

The Plymouth and Dartmoor Railroad runs through the said, by which a cheap conveyance can be had to Plymouth if any of the materials should be bought for shipment.

Sale to commence each day precisely at Eleven o'clock. An early attendance is respectfully solicited as the lots are numerous and valuable.

REPROVISIONS WILL BE PROVIDED.

1, St. Aubyn-street, Devonport, Feb. 18, 1846.

NEWTOWNARDS LEAD MINE.—TO BE SOLD, BY PUBLIC AUCTION, at the Odd Fellows' Hall, Douglas, Isle of Man, on Thursday, the 19th day of March next, at Twelve o'clock at noon, in lots, ONE HUNDRED and NINETY-ONE SHARES of the NEWTOWNARDS LEAD MINE, in the county of Down, Ireland. This mine embraces the whole of the town lands of Whitespot; has lately been extensively opened, and furnished with sufficient machinery to extend the workings for many years; is now in a remunerative state, with every prospect of immediate further improvement, and consists of 598 shares, held under lease from the Marquis of Londonderry, for an unexpired term of 18 years, from the 1st November last, and a sum, now six years of age, yielding a royalty of 1/16th. The youth having a strong constitution, and the families noted for longevity, causes the property to be valuable, and worthy the notice of mining adventurers.

TO IRONFOUNDERS.—TO BE LET, entry at Whitsunday, the OAK BANK FOUNDRY, on the banks of the canal at the Old Basin, now possessed by the London Vulcan Foundry Company, will BE LET to a respectable tenant, for a term of years, at a moderate rent. It consists of two large moulding shops, two cupolas, an engine of 8-horse power, and is capable of furnishing castings of nine tons weight. There are two good double-power cranes, with a great variety of moulding boxes, core bars, a variety of excellent wheel patterns, engine and machinery patterns, and other foundry utensils; also smithy and wright's shop adjoining.

FOR SALE AT THE PREMISES.

One new side lever CONDENSING-ENGINE, of 30-inch cylinder and 3-feet stroke, with malleable iron crossheads, cross-shafts, and parallel motion, substantially and well fitted. One 4-horse portable CONDENSING CISTERNS ENGINE.

One segment fly-wheel, 18-feet diameter, 8 tons weight, fitted. Two heavy clay-mill rollers, finished with table, shafts, and wheels.

One self-acting turning lathe, 18-feet bed—width on the bed 19 inches, and heads 16 in., slide rest and chuck, with apparatus for cutting screws of various pitches—on the construction of Mr. Fox, of Derby.

A condensing steam cylinder, cased, interior diameter 27½ inches and 6-feet stroke, with coupled side valves, nozzle, cylinder cover, metallic piston, and piston-rod.

Three sugar-mill rollers; driving roller, 3 ft. 10 in. long, 24 in. diameter, scrap malleable iron guide-joint journals, 8 in. diam. and 11 in. long, square 8 in. and 10 in. long. The journals of the other two rollers 6½ in. diameter, and 9½ in. long, square 7½ in. and 10½ in. long. These rollers are 4 ft. 3½ in. long over the flanges, all turned and fitted. One set of shifting gear, for a crane jib.

A large quantity of Spigot and Fance pipes, chiefly 4 and 5 in. diameter.

A Brahma pump, for proving pipes.

Several sets of iron tackle blocks, and a few shifting spanners.

Apply to Mr. Neilson, the proprietor, at Oak Bank.

Glasgow, Feb. 12, 1846.

TO ENGINEERS, ARCHITECTS, AND CONTRACTORS, GREGA'S GROUND BLUE LIAS LIME AND LIAS CEMENT,

AT 2, SOUTH WHARF, PADDINGTON, LONDON;

AND WORKS, SOUTHWARK, WARWICKSHIRE.

Agents for Liverpool Mr. Wylie, 36, Glosier-street.

Agents for Manchester Mr. J. Thompson, Back King-street.

Agents for Chester Mr. J. Harrison, Linen Hall-street.

MINE MATERIALS.—I. T. TREGELLAS, QUAY, TRURO presents his respects to MINERS, and begs to OFFER them the following GOODS, of good quality, and at the lowest market prices:

IRON, including best SHROPSHIRE IRON, extra-refined CHAIN IRON, BOILER-PLATES, KILN-PLATES, HOOPS, and SHEETS, Steel of every description

COALS, GUNPOWDER and POWDER CANS, HEMP and WIRE CORDAGE, Best Scrap Chain, warranted KILNS and WATER BARRELS, Nails of all kinds, SHEET LEAD, White Lead, and Red Lead SHOVELS, Pick and Moulds, Mallets and Mallet Iron Saws and Hatchets, Shovel Hiltis from 1s. per dozen, to 5s. per dozen.

PATENT FEELT, for covering cylinders, &c., PATENT ROOFING FEELT, 1d. per square foot

LIFTING JACKS, PATENT FUSE, SHOOTING NEEDLES, and CLAY IRONS, and every other description of materials for general mine consumption.

Dated Truro, Feb. 6, 1846.

MINERALS IN LANARKSHIRE TO SELL, OR LET.

The MINERALS on the farms of GILL and HAYHILL, lying in the parish of East Kilbride, and county of Lanark, situated about seven miles south of Glasgow, and midway between the villages of Kilbride and Eglasham. These properties are known to contain LIMESTONE and CLAYBAND IRONSTONE, which can both be wrought by mining. The ironstone on these properties was wrought and smelted in Clyde Iron-works upwards of 50 years ago, but was discontinued, in consequence of the distance and difficulty of conveyance at that late period. The newly projected line of railway from Glasgow to Leshamha will pass through the properties, and it is understood that a dépôt will be formed at or contiguous to the properties, and will thereby afford great facility of transit. The estate extends to above 100 acres, and every facility in point of time will be allowed to prove it by searches and otherwise.

For further particulars apply to Dr. Alston, East Kilbride.

GLAMORGANSHIRE.—Fourteen Miles from CARDIFF.

TO BE LET, ON LEASE, THREE SEAMS of superior COAL, lying under 600 acres of land—through the middle of which the Taff Vale Railway passes. There is also a canal communication, by which this coal could be delivered at the port of Cardiff for £6. per ton, all charges included. It is presumed this situation is not to be surpassed in eligibility, when the flat position, extent, and pure coking quality, of the coal are considered.

Inquire of Messrs. Crowder and Maynard, 45, Coleman-street, London; of Mr. W. P. Struve, civil engineer, Swansea; or to view the premises, of Mr. David Davies, Gellion, Newbridge, Glamorganshire.

TO BE SOLD, OR LET, SEVERAL valuable VEINS OF BITUMINOUS AND ANTHRACITE COAL, IRON, LEAD ORE, and FIRE CLAY, lying under extensive estates in the counties of Glamorgan, Carmarthen, and Brecon. The coal and minerals may be easily wrought, at a small expense; they lie within convenient distances of seaport and market towns; and are, to a great extent, workable by level. The South Wales and other projected lines of railway are intended to pass through or near the greater portion of the estates. The property commands eligible sites for the erection of iron-works, and possesses the advantage of having a constant supply of water-power at command. For further particulars apply to Mr. John Morgan, land and mineral agent, and surveyor, Swansea.

VALUABLE WATER-POWER, on the River Wandle.—A most desirable PROPERTY, comprising the FREEHOLD COPPER ROLLING MILLS, HAMMER MILLS, FURNACES, REFINERY, FOUNDRY, and FACTORY, with very valuable water power, with a fall of about 5 ft. 8 in. on the River Wandle, in Garretts-lane, Wandsworth, Surrey, fully equal to both 70 and 80-horse power, all well inclosed, with a manager's dwelling-house, good garden, numerous workmen's cottages with gardens, and several valuable parcels of meadow land, containing altogether nearly 30 acres, most eligibly situated within one mile and a half of Wandsworth, in the county of Surrey, and about seven miles from London.—To be SOLD BY PRIVATE CONTRACT by Messrs. DRIVER, the above most valuable and desirable FREEHOLD PREMISES, exonerated from land tax, which have for nearly a century and a half, been worked by the Governor and Company of Copper Miners in England; but they are perfectly applicable to any purpose requiring water power. The premises comprise a convenient small dwelling house for a manager, with a most excellent garden; a building about 36 feet by 70 feet, in width; a hammer mill, about 70 feet long, with two other water-wheels, one 15 feet and the other 12 feet diameter; a new building called the "Refinery and Foundry," about 85 feet by 45 feet, with three furnaces; stabling, sundry workshops, and a counting-house; an Artesian well, 165 feet deep, with 5-inch copper pipes; 12 workmen's cottages, and sundry parcels of desirable and valuable meadow land, containing altogether about 20 acres. The purchaser may or may not (as he pleases) take the machinery at a valuation; and in the event of his not taking it, the vendors reserve to themselves the power of selling the same by auction, or otherwise, on the premises, as per inventory.—To be viewed by tickets, which may be had at the company's offices, 57, Old Broad-street, and of Messrs. Driver, surveyors and land-agents, 8, Richmond-terrace, Parliament-street, London; whom further particulars may be known.

LA MERHOOR WHEAL MARIA COPPER MINE:

ROSCARROCK SILVER-LEAD MINE:

WHEAL MARY SILVER-LEAD AND COPPER MINE:

WHEAL WALTER COPPER AND LEAD MINE:

WHEAL CONCORD LEAD AND COPPER MINE:

WHEAL BRAY COPPER MINE:

WHEAL WEEKES COPPER MINE:

WHEAL KELLY LEAD AND COPPER MINE:

WHEAL BRADSTONE LEAD AND COPPER MINE:

WHEAL DUNTERTON COPPER MINE:

The BUSINESS of the ABOVE MINES is now CONDUCTED at No. 4, KING-STREET, CHEAPSIDE, where specimens may be seen, and all particulars obtained.

JAMES CROFTS, Secretary.

NOTICE TO THE PROPRIETORS AND SHAREHOLDERS OF MINES, SMELTING-WORKS, &c.

Messrs. MITCHELL and FIELD beg to inform the PUBLIC, that they have REMOVED from No. 5 to No. 23, HAWLEY-ROAD, KENTISH TOWN, where they have erected a spacious LABORATORY, fitted expressly for the performance of all OPERATIONS CONNECTED WITH MINING.—Practical instruction to gentlemen in Assaying, Mineral Analysis, and Manufacturing Chemistry in general.

Assays and Analyses conducted as usual.

All communications to be addressed to Messrs. Mitchell and Field, assayers, No. 23, Hawley-road, Kentish Town.

THE PATENT SAFETY FUSE, FOR BLASTING ROCKS IN MINES, QUARRIES, AND FOR SUBMARINE OPERATIONS.—This article affords the SAFEST, CHEAPEST, and most EXPEDITIOUS MODE of effecting this very hazardous operation. From many testimonies to its usefulness which the manufacturers have been favoured from every part of the kingdom, they select the following letter, recently received from John Taylor, Esq., F.R.S., &c.—"I am very glad to hear that my recommendations have been of any service to you; they have been given from a thorough conviction of the great usefulness of the Safety Fuse; and I am quite willing that you should employ my name as evidence of this."

Manufactured and sold by the Patentees, BICKFORD, SMITH, and DAVEY, Cornhill, London.

BY HER MAJESTY'S ROYAL LETTERS PATENT.

SMART'S ELLIPTICAL CONVEX METALLIC PADDLE FLOATS, FOR PROPELLING STEAM-SHIPS.—The very great superiority of this invention over the common form, in all points, having been fully proved by its use

ANTHRACITE AND IRON OF PENNSYLVANIA.

(Extract from the letter of an Englishman to his friend at home.—*Wm. Bristow.*)

In fulfilment of my promise, I now proceed to give you some account of the mineral riches of Pennsylvania. Not that I can offer anything more than a mere sketch, or outline; nor is it necessary for me to do so, as all further details on the subject may be found by such as seek them in the printed reports of the state-geologists, and of other gentlemen, employed either by the Government or by private companies and individuals, in investigating the coal-trade of those regions.

Pennsylvanian coals, as you well know, are of two kinds,—ANTHRACITE and BITUMINOUS, the former lying on the east, the latter on the west, of the Alleghany Mountain.

In these regions the primary rocks have altogether disappeared, or, if occasionally found, are found almost buried and lost amongst overlying rocks of the lower secondary series. This vast system of the lower secondary strata, which extends from the primary rocks upward to the carboniferous or coal-bearing series, consists of 15 separate groups, or formations:—

1. A hard compact SANDSTONE, almost purely siliceous, and frequently exhibiting evidences of the heating agency to which it has been subjected from the rocks below.

2. LIMESTONE, of a bluish, or, sometimes gray or nearly black, colour; containing sand, clay, flints, oxide of iron, fossil shells, and zoophites, with rich iron-ore above.

3. SLATE,—generally of a black or bluish, though sometimes of a gray, olive, or yellowish-brown, colour.

4. Hard, white and gray, or, sometimes, reddish or greenish, siliceous SANDSTONES, of various degrees of coarseness, and frequently containing pebbles of a considerable size.

5. Red and variegated SHALE, containing in its lower portion, red sandstone, and, towards the upper, thin layers of argillaceous limestone; also, excellent fossiliferous iron-ore.*

6. Argillaceous blue LIMESTONE, rather slaty, containing, sometimes, fossil remains, and, sometimes, iron ore.

7. Coarse-grained and rather loosely cemented SANDSTONE, of a whitish, or yellowish-white, colour, having, in some of its beds, abundance of fossil shells, bands of chert, and occasionally a little iron-ore.

8. Alternating strata of dark-gray, greenish, and olive-coloured SLATES, interstratified with gray and greenish argillaceous SANDSTONES, and, in the lower beds, with thin layers of LIMESTONE.

9. Brownish-red, greenish-gray, and blue-coloured SANDSTONES and SHALES.

10. Massive beds of coarse, hard, gray SANDSTONE, sometimes containing pebbles, with occasional bands of dark-greenish SLATES intermixed. In this formation are sometimes found bands of black carbonaceous slate, flattened stems of plants, and even thin scales of coal itself†.

11. Red SHALE, and red SANDSTONE, with alternating layers of gray sandstone,—and, here and there, IRON-ORE of considerable value.

12. Massive strata of coarse siliceous CONGLOMERATES, alternating with white, or light-coloured sandstones, and containing some thin beds of dark carbonaceous shale.

13. COAL,—the lowest beds of which are generally found near, and, sometimes, even in the conglomerate rock. In ascending, however, we frequently find the coal-seams, more or less, separated by beds of soft argillaceous, bluish-gray, or light gray, sandstone, and of dark-coloured or grayish slates and shales, with occasional bands and kidney-shaped masses of valuable iron-ore.‡

The anthracite region may be divided into three distinct coal-fields, all bearing the same geological character, but separated from each other by anticlinal axes or lines of elevation, and then sub-divided within themselves into lesser synclinal axes, or trough-shaped basins. First—there is the south or Schuylkill region, running nearly east and west, and extending from the neighbourhood of Manch Chunk and the Lehigh, to that of the Susquehanna;—secondly—the Middle region, ten miles further north, and almost parallel with the former;—and thirdly—in the north and north-east, the Wyoming region, which extends from above Carbondale on the Lackawanna, to the north branch of the Susquehanna near Schicksherry. All the coals of these three regions, excepting only a small portion at the western extremity of the first, consist of anthracite, lying in beds of various thickness, from 1 to 20, 30, 40, and even 60 or 70 feet. In many places—particularly amongst the precipices, ravines, and river-channels of the country,—large seams lie open to the naked eye. At Locust-gap, in the middle region, (a narrow valley, made by the passage of the Locust-creek through the Leest-mountain, and looking as if the hand of nature had taken a slice out of the mountain to let the waters through,) this is especially the case. Here may be seen a body of coal, the magnitude of which is hardly to be conceived, but by those who have visited the spot. The veins—in some places by the action of water, and, in others, by the overthrow of large pine-trees, recently blown down—are often half-denuded. One of these trees I saw lying in the creek with, at least, half a ton of coal, which had followed its downfall, scattered around it. The usual mode of mining here is by running a tunnel or drift into the hill just above water-level, and of sufficient size to admit rail-waggons. The breast of coal is then pursued by the miners to the summit or out-crop, working out the coal as they proceed, and throwing it behind them, or sliding it down to the drift, where it is put into the waggons, and then conveyed by railroad to the nearest market or canal.

These anthracite coal-fields have been calculated to contain about 975 miles, or 624,000 acres. It has also been estimated that each cubic yard of coal in the ground, yields a ton when mined, so that a horizontal stratum of coal but three feet thick, extending over the space of one acre, would afford 4,840 tons, and proportionally more according to the steepness of the dip or inclination. Now when we consider the number and thickness of these coal-beds, each overlying the other, we can hardly conceive, much less calculate, the quantity of this article, or how much it must add to the future wealth and greatness of Pennsylvania. During the last 20 years, the quantity of anthracite, raised and sent to market from these mines, has grown up from almost nothing to more than 2,000,000 of tons. In 1820, the amount was only 365 tons; in 1830, 174,737; in 1840, 865,414; in 1845, 2,012,742. Thus has the trade more than doubled within the last five years, and is still only in its infancy. What with the daily increasing population and manufactures of this country,—with her increasing railroads and facilities of conveyance—what will it be in 5 or 10 years more? ¶

Nor is the iron-trade less prosperous and promising; and with such superabundance of fuel (both coal and charcoal) and variety of iron-ores, all more or less rich, and several of them yielding from 40 to 60 per cent. of metal, it would be wonderful, were it otherwise. In 1839, the quantity of ore, mined and smelted, amounted to 500,724 tons, producing somewhat more than 190,000 tons of iron. It now exceeds 300,000 tons of metal; and railroad iron, equal to any in Europe, is now manufactured at Danaville, as it will soon be in many other places, from anthracite alone. The profits of the ironmasters on this, as on their pig-iron, are immense,—not less than 100 per cent.

All these things, as you may well suppose, have raised, and are yearly raising, the price of lands in these districts. I know two estates,—one of 414 acres, (eight miles west of Pottsville), and the other of 1700 acres, (a few miles farther north towards Sunbury)—either of which I might have had, five years since, for between \$10 and \$17 an acre, which are now producing an annual rent much greater than the sum then asked for the fee-simple, and which could not now be had at 20 times the original cost. Had — laid out his money on lands like these, instead of investing it, as he has done, in different States' stock, he would now be enjoying an income equal to his hearts desire.

There are still numerous tracts equally abounding in mineral wealth, though not at the present moment so conveniently situated for markets, which might be had at from \$10 to \$20 an acre. Only a few days since I most reluctantly declined the offer of a large tract in the middle region at \$17 an acre, which must soon (when a few miles of neighbouring railroad are completed,) be worth more than 10 times that sum. Another estate in the same district, wanting the completion of only three-quarters of a mile of railroad, to connect it with

* Such as is now so extensively worked in several of these districts, particularly along the Montour-ridge, in the neighbourhood of Danville.

† This series forms, as it were, the outward ring of all the anthracite coal-fields in Pennsylvania.

‡ In these coal-fields, (says Mr. Lyall,) particular seams are found to be more persistent than the accompanying beds of grit, shale, sandstone or limestone. As we proceeded from Pottsville and Tamaqua, we found the beds of grit and shale gradually to thin out, so that several beds of anthracite, at first widely separated, were brought nearer and nearer together, until they united and formed one greatness. The same is particularly the case in many parts of the Shamokin district. On the tops of the hills and ravines may be seen coal strata interbedded with slate and earth; but in descending, the intervening layers grow thinner and thinner, and soon run out, leaving a large unbroken body of coal without admixture of any sort.

This region must become, ere long, one of the greatest coal and iron manufacturing districts in the United States, if not in the world. All who have visited the neighbourhood, will, I am sure, concur with me in this opinion. From the high breast (several hundred feet above water-level,) presented by the mountain, the veins are easily accessible, and at the cheapest rate. No sinking of shafts or slopes, no steam-engines or expensive machinery,—nothing but drifts being at all necessary for getting at the coal and iron.

The effects of the coal-trade on the interior of the state are quite wonderful. It has peopled whole districts, and made the solitary places glad, building up towns and villages, constructing railroads and canals, and

“Changing the habits of wild bears.”

Though Pennsylvania is involved in a debt of \$40,000,000, in consequence of her railroads and canals, yet have these works added more, far, far more, to the intrinsic value of the state, than their actual cost, and, instead of impoverishing, have inculcated increased, both her public and private wealth. The annual production of Pennsylvania, agricultural, mineral, and manufacturing, are upwards of \$200,000,000, 1 per cent. on which would pay the interest of the state debt. Instead, therefore, of being bankrupt, Pennsylvania is abundantly able to meet all her liabilities, and nothing but moral courage in her legislature, has been ever wanting to enable her to do so.

* The first of these estates has been leased to miners, for a term of 10 years, at 35 cents, net, for each ton of coal, they covenanting to raise not less than 35,000 tons per annum, which makes the proprietor's rent \$12,250 per annum. Fortunes of the 1700 acre estate have been also let to miners on nearly similar terms, and are already returning to the proprietors an income of more than \$50,000 per annum.

the Susquehanna and Great Pennsylvanian Canal, I could purchase—had I the money—at between \$30 and \$40 an acre. Both these estates may be said to overflow with coal and iron: 10,000, or 15,000 judiciously laid out there, would, in the course of a few years and without risk of any kind, secure to the possessor quite a lordly fortune. I would not, however, advise any one to purchase, here or elsewhere, without being well acquainted with the property,—with its mineral qualities, as well as with its location in regard to railroads and canals, and all present and future means of communication with other parts of the union. I had intended to give you some account of the Great Western or bituminous coal-fields of the state, but as it is nearly two years since I was among them, and as great changes and advancements have taken place in the interval, I shall defer all description of that region until I can again visit it. It may suffice, for the present, to say that the progress which has been, and is still being, made there in art, commerce, and wealth, even exceeds what has been done in the east. Pittsburg, its capital, in consequence of the natural advantages which it enjoys, more especially its river-situation and inexhaustible supply of finest coal, has been, in less than 50 years, converted from a village of log-huts into a great manufacturing and commercial city. But enough of this until my next letter.

P.S.—The Dannville Iron Company manufacture almost entirely with anthracite,—at a cost of about \$15 a ton for pig-iron, and \$35 for railroad iron, which yields them, as I have said, a profit of more than 100 per cent.—the selling price of the former being from \$30 to \$35 per ton, and of the latter \$75! No wonder then, that they should be such zealous advocates of a protective tariff!

CHEMISTRY OF THE STEAM-ENGINE.—LECT. II. (Continued.)

BY THOMAS CRADDOCK, ESQ., BIRMINGHAM.

The objections brought against the tubular boilers are as follows:—Liability to priming, or the steam passing off to the engine mixed with water; irregularity in the pressure of the steam for the use of the engine, from the small quantity of water they generally contain; liability of the tubes to become furred up by deposit; greater complexity, together with greater original cost, and greater liability of derangement, with their becoming short of water from the small quantity they at any time contain. I have been thus particular in enumerating all the objections that I have been able to collect, as being brought against the tubular boiler. Before we proceed to investigate the objections of both boilers, it may be well to inquire how far in each case they are founded on those natural laws over which man hath no control, in which, as I anticipate, those I have enumerated of the common boiler take their rise, and therefore are beyond our power of eradication. Such is that which the hydrostatic principles make known to us, of fluids acting equally in all directions, and therefore tending to rend asunder the vessel containing them, according to the number of inches in its surface, as well as the number of pounds pressure per square inch. From this law, it follows that, if we take one of the best formed boilers of the common kind, and only 4 ft. in diameter, with only 6 lbs. pressure above the atmosphere, we find that there would be a rending force upon every part of its cylindrical surface, equal to 900 lbs.: but if we suppose that by any unforeseen cause this should even attain to 36 lbs. per inch, we should then have a rending force on its cylindrical surface equal to 5400 lbs.—the strain of which would act upon every part; the part, therefore, that from any cause was the weakest, would be the first to give way. But the case I have supposed is a very moderate one; for, as I shall be able to show in my next lecture, that there is great reason to believe that in many of our boiler explosions, the pressure even attains to 200 lbs. or upwards per square inch; we shall find, in that case, that the rending force on every part of the cylindrical surface of such a boiler as we have supposed would be 180,000 lbs. Perhaps the simplest conception that we can form of the manner in which this force acts, would be to take a ring of the boiler of 1 in. wide, and of course 4 ft. diameter. Conceive now that, by an expanding cone, we produce a rending pressure equal to 180,000 lbs.—we have in this way, though it may be a crude conception of the nature of this hydrostatic pressure, yet at least an approximate notion of the rending force thus produced; if the boiler were 20, or even if it were 100 feet long, and cylindrical, then would there be as many times 180,000 lbs., as there were inches in its length. This gives you a near conception of the tremendous strain large boilers, under such circumstances, must have to withstand. Now, it is a natural law that fluids act in this manner, and therefore it is in vain for us to seek to mitigate the danger arising thereby, from our attention to them. But yet we are not left without a remedy; for although we cannot alter this law of fluid pressure, yet we can at will diminish the size of the cylindrical vessel, in which we wish to generate or retain steam; this answering every purpose conducive to man's convenience. To give an instance—if we take a 3-inch tube, and instead of 6 lbs. pressure, we generate steam in it equal to 100 lbs. pressure per square inch, we now find that we have, as before, but 900 lbs. rending force, but here we have steam of 16 times the pressure of that in the common boiler, which, as will be remembered, was but 6 lbs. per square inch. To take the latter case of 200 lbs. per square inch on the surface of the 3-inch tube, we find we have only 1800 lbs. rending pressure—while we saw that in the common boiler of 4 feet diameter, we had 180,000 lbs. rending force, or 100 times as great a strain upon every part of its surface. Is it objected, that my instancing the accidental high pressure of 200 lbs. is not a fair mode of putting the question? My answer is, that it is, against such contingencies or accidental circumstances, that men, in all their combinations and contrivances, should be vigilant, or on their guard,—for from such contingencies arise the most destructive and deplorable accidents. But this is scarce the worst effect our common boilers are liable to produce; for, as they contain a great quantity of water, and as this water, when impregnated with heat, as in the steam boiler, becomes an immense magazine of explosive matter, which, on the bursting of the boiler, is instantly set at liberty, producing death and destruction around. Surely, if these accidents were far less numerous than they are, it may be worth a moment's thought, if they may not be prevented; but supposing that, on a strict investigation and impartial application, every sound principle be found waiting to relieve mankind from this (the worst) result of that otherwise useful and beneficial agent, the steam-engine, which hath so long, and would seem to be yet destined to become more universal in its relation to the physical energies of our race, and through them to the expansion of their higher and nobler powers. Here again the advantages of the tubular boiler, in preventing such fearful results from explosion, are strikingly obvious,—for as all explosive mixtures are dangerous in proportion to their quantity, as may be illustrated by 1 ounce as compared with 1 cwt. of gunpowder, so also are their destructive consequences the more to be feared in proportion, as its force is more or less expended in one direction, and through a given opening, as in the charge which escapes at the cannon's mouth, compared with the more diffusive and uncertain effect produced by its bursting. It will readily be seen, that in the tubular boiler, a greater area than the tube itself cannot exist, for the escape of the explosive matter, so also will it take a circumscribed and definite direction,—whereas, upon the bursting of the large exterior shell of the common boiler, an amount of explosive matter, many times greater than that which the tubular boiler will contain, is instantly scattered in all directions—life and property alike share its desolating consequences. But as I like to anticipate any objections that may be made, to my using a steam chest of 18 inches in diameter—I answer, first, that, as no heat has to be transmitted through the metal thereof, it is not injured thereby; besides, the metal may be of such a thickness without detriment as to preclude the possibility of its bursting, before the tubes. But supposing it were to burst, as it contains nothing but steam, which is in itself not a very dangerous element—the chief danger in boiler explosions, arising from the great quantity of water, together with the solid matter which is blown in all directions—and as the boiler containing the water is only connected in my case with the steam chest, by a pipe of 8 inches diameter—as far as the water was concerned, the bursting of the steam chest would in no ways differ from that of a steam pipe of 3 inches diameter, which every engine driver knows to be a very different thing from that of the bursting of his boiler.

I have already intimated that we have nothing to sacrifice in the economy, adaptability, lightness, and compactness, of such boilers, as would put an end to these desolating consequences. It is obvious that the common boiler doth not admit of so extended a surface for the absorption of the heat: nor dare we have the metal thin, of which it is composed? These we have seen are two of the most essential principles for the production of steam with rapidity and economy,—whereas the tubular boiler affords both these conditions to their fullest extent. The common boiler is also lavish both in weight and room: here again the tubular boiler presents us with all we can desire; for although the tubular boiler is capable, when of much less weight, and occupying much less room, to produce an equal quantity of steam, even at a less expenditure of fuel than that of the common boiler, yet it is possessed of a greater recommendation than this—viz., that by its use we can generate steam with perfect safety of a much higher pressure, and thereby (as I shall explain in my fourth lecture) reduce the quantity of steam required for the production of a given amount of mechanical effect by at least one-half. Such is the consoling tendency of the soundest principles, which, when well understood, and properly applied, are not conflicting elements, but work-on harmoniously together for our good. This brings me to the investigation of what are considered the defects of the tubular boiler. The first objection we named was—liability to priming. This objection I found a very serious one, when I first commenced the use of a tubular boiler. But being aware that a column of water, however small, would have a pressure equal to its altitude in forcing the water back again into the tubular generator, which was carried over in the manner technically called priming, I therefore continued to elevate the steam chest, which is a cylindrical vessel of 18 inches in diameter, and composed of $\frac{1}{2}$ inch plates. This being elevated about 4 feet above the top of the boiler, the steam, though it be produced, and flow over from the tubular generator in a very moist state, yet the water therewith carried, passes back to the bottom of the boiler, whilst the dry steam ascends to the top of the steam chest. I thus obtain as dry steam for the use of the engine, as is possible to be produced; for on opening the top of the high pressure cylinder, the steam may be seen to rush out of a bluish appearance, and on holding the hand in it for some time scarce any deposition of water is perceptible. I may here remark, that were it not dry the hand could

not be held in its current long. It may not be known to all, that in dry and high pressure steam, the hand can be held with impunity for some time; but not so in the low pressure or moist steam. The next objection to tubular boilers, is that, from their containing a comparatively small quantity of water, the uniformity of the pressure of the steam therein generated, is not so easy or so well attained, as in the common boiler. This is an objection that does exist; but like most others brought against this species of boiler, admits of a simple and efficient remedy—as, if chemistry did not teach us that the rate of combustion produced in the furnace is dependent upon the quantity of air passing through, every day experience would soon convince us of this. This being the case, the master stands that—the quantity of heat generated is dependent upon the quantity of air admitted; so also is the quantity of steam produced dependent upon the more or less intensity of the fire. If we, therefore, admit the air, in a greater or less proportion, so as to keep the intensity of the fire proportionate to the pressure of the steam, or wants of the engine—I say, if we can do this, then does this objection vanish likewise. We can accomplish this in the most effective manner, and by the best possible means—viz., that by the pressure of the steam, we desire to keep uniform, regulating the supply of air to the furnace. The explaining the manner this is effected, will form part of my third lecture. The third objection we noticed was the liability of the tubes to become furred up: this objection I completely remove, by my mode of condensing the steam, which thereby enables us to use the same distilled water continually. This is a matter of the greatest importance to all kinds of boilers. The fourth objection was complexity, with greater original cost: this objection, like the others, will very shortly become baseless—as I have a mode whereby I make my tubular boilers, which only requires to be seen, to be acknowledged to be simple and effective; and as the tubes are now the most expensive part of tubular boilers, they will, from the daily increasing competition of the makers, together with their rapidly extending use, soon be obtained at a much less cost, and thereby enable us to produce tubular boilers nearly (if not quite) as cheap as those of the common kind. Tubular boilers, when simply arranged, and well made with iron tubes, will before long be acknowledged as not at all more liable to derangement than those of the common kind—whilst on the bursting of the tubular boiler, nothing more would in all probability take place, than to put out the fire, and to stop the engine for an hour or so. But how different would be the consequence of the bursting of the common boiler—the result of that being too common the sacrifice of many lives, with the destruction of much property. The only remaining objection is, that from its containing little water, the liability is greater of its becoming low. Here, again, owing to my passing the same water to and fro continually, should any stoppage of the supply of water ensue, it very quickly gives us warning by the cisterns becoming full, or in its flowing over the engine-house. I may here remark, that the addition of a few gallons per day is all that is required for the use of the boiler. We see therefore, that the soundest abstract principles point us to tubular boilers, to ensure at once safety and economy; whilst the best practice, together with the appliances I have laboured to bring to it, and by condensing the steam, which enables us continually to return the same pure water, leave but little remaining to remove every valid objection to the use of such boilers. Here I am sure the facts are with me, though prejudice and power be against me. The extent of the advantages of tubular boilers for marine purposes is not easily conceived—that they, in conjunction with a greater degree of expansion in the use of steam, to which they will lead, will give to our marine steam power such an extended and economical application as would at least render it equal to voyages of double the distance the present system is equal to. Nor would the advantages end here, as the loss of steam-vessels by explosion would be no more heard of: the comfort and cleanliness of such vessels would partake also of that which the sailing-packets now so far surpass them in. As I shall have to recur to this subject in my fifth lecture, I will merely remark, that not less striking would be the good effects of these boilers whenever they may be applied for railway purposes; for although the present locomotive boiler, as a generative vessel, for the purpose of producing a great quantity of steam in little room, and less time, may be said to have attained a great degree of perfection—yet it is at the expenditure of an enormous amount of power in the back resistance, which the jet imposes upon the exhausted side of the piston,—whilst, without this jet, they are not capable of evaporating more than one-fifth the quantity of water they do with it. I have attempted to show, that with such tubular boilers as I have been speaking of, such a quantity of steam may be obtained, if desired, by what I have called the natural draught. The locomotive boiler is a species of tubular boiler, which, as far as its heat absorbing powers go, may be said to be nearly perfect,—but in its liability to explosion, it partakes in part of the vicious principles of the common boiler, by having a large quantity of explosive matter acting upon a large cylindrical surface. Owing to very exaggerated fears, and the manner in which they are too often ministered to, as a means of enlisting popular prejudice against the introduction of principles, such as I am advocating in reference to high pressure steam used expansively, I would propose the following simple and decisive experiments, which, if any amount of evidence could suffice to convince men who minister to this ill-grounded prejudice, it would do so. Let us take two boilers—the one on the usual marine principle, and the other a tubular, such as I have been treating of: I propose that the steam be got up in both, to their fixed pressures, which in the marine we will suppose is 18 or 20 lbs. to the square inch, and in the tubular at 115 or 120 lbs. per square inch; the atmospheric pressures, inclusive in both cases—the steam

Mining Correspondence.

ENGLISH MINES.

BARRISTOWN.—*Carry Tagmon, Feb. 27.*—There is no change in the 18 fm. level end west—it still produces 3 tons per fm.; the pitches, at this level, continue to improve; the lode in the eastern end, on middle lode, is still poor. The lode in Nangles' shaft, and the end up the hill, looks much the same, but producing rather less ore—about 1½ tons per fm. We expect to intersect the lode in footway shaft in a few days, which will be 4 fms. south of our present operations at the 18 fm. level. We have dressed and ready for shipment 40 tons of lead ore, which would have been shipped this week, had it not been for the incessant storms. I hope to effect this shipment next week.—T. ANGOVE.

BEDFORD UNITED.—*March 3.*—At Wh. Marquis, the lode in the 80 fm. level east is 18 in. wide, and unproductive; this level is not advanced far enough east for the run of ore ground gone down in the 70 fm. level east above. The lode in the 70 fm. level east is 3 ft. wide, and without alteration; and in the winze in this level the lode is 2 ft. wide, and worth 10½ per fm.; in the stopes, at the back of this level, the lode is 2 ft. wide, and worth 10½ per fm. The lode in the 58 fm. level east is 3 ft. wide, composed of mundic, spar, and ore, worth 8½ per fm. The south lode, in the 47 fm. level west, is 10 in. wide, and poor. At Ding Dong, we shall commence taking down the lode in the 24 fm. level west by the latter end of this week. At Wheal Tavistock, there is no alteration in the shafts or levels. We weighed at Morwellham on Friday last, December ores, 102 tons 12 cwt., and sampled January ores, com-puted 101 tons.—JAMES PHILLIPS.

CALLINGTON.—*March 2.*—In the 100 fm. level, driving south, we are opening ground that will set at 5s. in the 11 fm.; the north end continues driving through good tribute ground. In the 90 fm. level, driving south, the lode is a very promising appearance, worth 10½ per fm.; in the north end the lode is worth 15½ per fm.; driving north, from the north engine-shaft, the lode is producing silver-lead ores; the water is increasing here, and more forcible than before; in the south level, we are leaving ground that will set at 5s. in the 11 fm. level, driving east, is producing copper ores. In the 80 fm. level, driving south, the lode has not been taken down; driving west, on the copper lode, the ground is favourable; the pitches, on this lode, at the 70 fm. level, are looking well; driving south, at the last mentioned level, we are opening ground that will set at 10s. in the 11 fm. The pitches, generally speaking, continue to turn out well. Our last parcel of silver-lead ores (101 tons), have sold at 20s. 12½ per ton.—J. T. PHILLIPS.

CRADDOCK MOOR.—*Feb. 25.*—The lode in the bottom of the north shaft is divided into branches by a horse; but we hope we shall soon get through it, when we anticipate that the lode will again be found productive of ore. The lode in the south shaft is about 18 in. in width, including a branch of quartz and ore, 6 in. wide; it underlies north about 10 in. in a fathom. In the past week we have discovered a lode, situated 18 fms. north of the south shaft, and 39 south of the north shaft; it is composed of soft prian and quartz, with spots of yellow ore, 3 in. in width, and is situated in an easy channel of ground, very different from the other lodes; we have commenced a shaft on it, which, should the favourable ground continue, will supersede the necessity of sinking the south shaft, as the lode in this latter could then be worked by cross-cuts from the new shaft.—JAMES NANCE.

At a meeting of adventurers, held at Liskeard, on the 25th ult., the accounts—showing a balance against the mine of 7s. 1s. 9d.—having been examined, allowed, and passed, it was resolved, that a call of 1s. per share be declared, payable at the Devon and Cornwall Bank, Liskeard.

EAST TAMAR CONSOLS.—*March 2.*—At Whitsun, in Hitchins's engine-shaft we have been deceived as to the bottom level; in clearing the shaft, 10 fms. below the 36 fm. level, we have discovered another level driven north and south; the north level is driven about 5 fms., where there is a kindly lode, with good stones of ore; at the south level we cannot get in very far, it is full of mud, as how far it is driven we cannot tell yet; we intend clearing as soon as possible. At the south shaft we have cleared the 36 fm. level 17 fms. towards Furzehill, this last week, for making a barrow road, as I said before. At Furzehill, we have set the stopes, south of the engine-shaft, on tutwork, at 30s. per fm.; also, we have set the north level to clear and secure towards Whit-sun. Our tribute department is looking very promising.—B. ROBINS.

EAST WHEAL ROSE.—*March 3.*—Account for Nov. and Dec. —
Nov.—Costs this month £2084 8 5
Surgeon and club 31 16 6
Dec.—Costs this month 1871 12 11
Surgeon and club 31 18 3
Bills those months 1588 11 11
Coals ditto 100 0 0
Donation for relief of labourers 50 0 0
Dues 964 18 2
Income tax 110 12 3
Discount on ore bill 96 19 8
Dividend—60s. per 126th share 7630 0 0
Balance 14,610 18 1
2,728 1 7
Total 17,338 19 8
Oct. 31.—By balance of last account £2462 12 3
Nov. 14.—Proceeds of lead ore 2928 13 7
28.—Ditto ditto 4281 1 8
Dec. 12.—Ditto ditto 3432 14 11
19.—Ditto ditto 460 17 8
20.—Ditto ditto 3663 0 2
Cargill adventurers, for agency, water-charge, &c. 99 19 5
Total £17,338 19 8

GONAMENA.—At a meeting of adventurers, at Liskeard, on the 25th ult., the following accounts having been allowed and passed,—it was resolved—“That a call of 1s. per 1-256th share be now made, to be paid immediately at the Devon and Cornwall Bank, Liskeard.”

Labour cost for two months—viz., Nov. and Dec. £249 11 0
Materials 155 1 2
Balance now 116 14 3—521 7 3
Call made at last meeting £512 0 0
Balance of last account 9 7 3—521 7 3

Report.—The engine both pumps the water and draws the stuff, and is of sufficient power for both purposes for a long time to come. The engine-shaft was commenced on a continuation of West Caradon great cross-course, at the point where (being sunk perpendicularly) it will be likely to intersect (at 35 fms. deep) the most promising of the five lodes cut in our adit. It has been sunk 25 fms. out of the above 35, and is at present progressing slowly, on account of the cross-course, having taken a west underlie and gone out of the shaft, which is now sinking in the granite. At the adit level, 5 to 6 fms. deep, we drove on the north lode about 30 fms. west, and 20 fms. east; this lode was found large, sometimes 4 to 5 ft. big; we had some ore in it both east and west, with gossans and other indications of productiveness below, the lode (as is also the case with two or three of the others) being of the same nature as those at West Caradon Mine adjoining. After sinking the shaft 20 fms. under adit, we drove a little south to cut the above north lode, and have since continued this cross-cut 11 to 12 fms. further south to another very kindly lode cut this week, and we intend to keep on to intersect the other lodes. The lode just cut is about 12 in. big towards the bottom, and contains good stones of copper ore with fluor, a very promising lode. After cutting the north lode at the 20, we have driven east on it 16 fms.; lode now small, split up, but about 7 fms. back we drove through a small bunch of ore about 1 ft. big, and 2 fms. long, and we also had ore more or less almost all through the level, and still have in the end. The 20 west has been driven 15 fms.; lode in the end nearly 2 ft. big, with a leading course 1 ft. big, containing good stones of ore; we have rarely been without ore in this level, and a few fathoms back had a leader of ore 3 or 4 in. big. At the eastern part of the mine, 150 to 200 fms. from the foregoing workings, we have commenced another adit to cut the same lodes, our sett being so extensive as that this eastern part approaching the Caradon Mine will be no-thing to fear for years, if we wait for the western workings to be carried so far east. We have not yet cut any lode in this latter adit.

GREAT WHEAL MARTHA.—*Feb. 28.*—We regret that nothing has yet been done at the bottom of the old mine, owing to another breakage. The lode in the winze sinking in the 60 fm. level west is very hard, and the air being deficient to work properly, we have removed the men to stop the back of the level, the lode in which produces some good stones of ore. At the new mine, the lode at the 20 fm. level east is 10 ft. wide, containing a little ore. The lode in the western end is 4 ft. wide, very promising. The lode at the point of the 10 fm. level (which is extended 15 fms. beyond that part of the 20), is very much improved, although mundic is the predominating mineral in it, it is less compact, nor does it contain near so much arsenic as is found in many other parts of the mine; the strata too is traversed by small veins of copper ore of good quality; the lode in the back of the level is 4 ft. wide, and worth 12½ per fm., cost in stoping 12½ per fm. The shaft men are working well, as are also the engineers. We expect the engine will be set at work in about 5 weeks from this time. The tributaries will prepare their ores for market against the next sampling.—J. PRINCE. T. PENALUNA.

HANSON.—*March 2.*—At Treza, our sumpmen are driving at the 22 fm. level, east and west of Stainsby's engine-shaft, on Stainsby's lode; the lode in each end is 2 ft. wide, ore-y and kindly. The lode in the 12 fm. level east is 3 ft. wide, a very kindly lode, with some ore. The caunter lode has fallen in with Stainsby's going east, and are now going in together; the lode in the 12 west is 9 in. wide, unproductive. At Hanson, our sumpmen are driving south towards the lode at the 64 fm. level; ground favourable, hope to cut Wheal Ribb lode in two or three weeks. The lode in the 64 west is small and poor. The lode in the winze, sinking under the 44, is 20 in. wide, composed of mundic, iron, and spar, kindly, but very little ore.—Z. WILLIAMS.

GUNNIS LAKE.—*March 3.*—At Chilsworthy, Bailey's engine-shaft is 4 fms. 1 ft. under the adit level—lode about 2½ ft. wide, principally gossan. We have continued costeanning, and cut a lode (supposed to be the middle lode, from which great quantities of ore have been raised further east), about 2½ ft. wide, composed of gossan, spar, and mundic, and equally promising as the lode at a similar depth in the old mine east. In our next report, it is hoped, we shall be able to state that the other lodes in this sett south have been met with. There has also been a lode discovered 60 fms. south of the Wheal Hindstone lode, supposed to be the lately-discovered south lode in the Bedford United Mines sett, which is upwards of 3 ft. wide, composed of gossan, spar, iron, mundic, and peach, with a small proportion of grey ore, altogether a very strong promising lode.—W. RICHARDS.

HAWKMOOR.—*March 3.*—The lode in the south engine-shaft is about 1 ft. wide, composed of spar and mundic, with spots of copper ore. In the western engine-shaft the lode is 15 in. wide, much as last reported. In the 15 fm. level, west of Hitchins's engine-shaft, there is no alteration—in this level east, the lode is 2 ft. wide, composed of capel, spar, and ore, producing saving work.—P. RICHARDS.

HOLMBUSH.—*March 3.*—Hitchins's shaft is sunk 7 fms. below the 110 fm. level, the ground in the bottom of the shaft is hard. The 120 fm. level cross-cut is under the shaft, and we are opening ground each side of the level to prepare for rising against the shaft, which we expect to do this week. In the 110 fm. level, west of Hitchins's shaft, the lode is 12 in. wide, and worth 12½ per fm.; in the stopes, in the back of this level, the lode is 2 ft. wide, and worth 10½ per fm. The lode in the 100 fm. level, west of Hitchins's shaft, on the north part, the lode is 18 in. wide, and worth 30½ per fm.; in the 100 fm. level west, on the south part, the lode is 10 in. wide, producing stones of copper ore; we have driven through the lead lode at this level, and have intersected the eastern wall; the lode is 9 ft. wide, 4 ft. of which on the eastern side is composed of prian, spar, and small branches of lead, the remaining 5 ft. is principally flookan and spar; we have opened about 4 fms. in length on it, and, we believe, from the direction of the lode, it is standing behind the old level so far north as the cross-cut; we are of opinion this lead lode will greatly assist us in prosecuting the mine in course of time, when we have opened more ground on it at this level, and have intersected it at the 110 fm. level, and communicated to the 100. We have commenced driving south at the 100 fm. level, from what has been called the Flapjack lode, but we are inclined to think the main part of the lode is further south, seeing there are several small branches of copper ore and mundic dipping south, the underlay of the Flapjack lode, being north, as seen at the adit, 20, 40, and 70 fm. levels, besides there is water issuing from the south side of the level. In the 90 fm. level, driving west on the north part, the lode is 9 in. wide, producing stones of copper ore; in the 90 fm. level, driving south on the lead lode, the lode is 2½ ft. wide, composed of spar, prian, and spots of lead. In the 62 fm. level, driving north, the ground is favourable, and we expect to communicate to the other level this week. In the rise, in the back of the 80 fm. level, against Bray's shaft, the lode is small and worthless. We weighed at Calstock Quay, on Friday last, January ores, 113 tons 15 cwt., and sampled February ores, com-puted 95 tons.—W. LEAN.

LAMHEROOE WHEAL MARIA.—*March 3.*—We have commenced sinking our shafts. Hays's engine-shaft is sunk 11 ft. 6 in. I have put 12 men, 8 sump or shaftsmen, and 4 labourers, to tackle, to draw the attle, &c. Davey's shaft is sunk 8 ft. 10 in.; I have 9 men there, three working every 8 hours; in Davey's shaft, we have water. We have four men driving to hill on letter A lode. I see in the *Mining Journal* this week, 60 tons of copper ore have been raised by one man and a boy in Wheal Martha Mine in three weeks or a month, under the 10 fm. level, which is the same lode as letter B, called Hebdard's lode. Wheal Martha is to the west of us, and joins our sett, divided by the river Tamar. We have six men in our cross-cut, and 10 men working on the surface, making roads, taking away earth, &c., and shall increase hands.—J. TABB.

LANIVET CONSOLS.—In consequence of our not being able to keep the water, Elizabeth shaft has only been sunk 1 fm. this past month—the 70 fm. level, we also have suffered from the same cause. The 70 fm. level east has been driven 1 fm., 2 ft. 6 in.; lode still large and hard, producing but little ore; the 70 fm. level west has been driven 3 fms., 3 ft., the lode here is large and kindly, but not producing much ore. We expect this end is gone through the first bunch of ore west of Elizabeth shaft; but hope in a very few fathoms driving to meet with another, which we know to be gone down from the 60 fm. level. The 60 fm. level east has been driven 4 fms., 1 ft. 6 in. through a kindly lode, about 2 ft. wide, composed of flookan, prian, spar, &c. The cross-cut is very nearly got under the whin shaft, but we fear it will not sufficiently drain the ground, so as to resume the shaft, before we have a little more dry weather. We have set a pitch in the back of the 70 fm. level west of Elizabeth shaft, at one farthing in the 11 fm. to raise 14 tons, and for the remainder of the taking (should they raise any more), at 2s. 6d. in the 11 fm.

SILVER VALLEY.—*March 2.*—I beg to say, that the lode in the 80 fm. level, driving west, is 2 ft. wide, producing some stones of tinwork; the lode in this level, east, is 2½ ft. wide, 1 ft. of which is saving work for tin. The lode in the 70 fm. level west is improved since last week, being about 3 ft. wide, composed of capel, spar, and peach, with 9 in. of the north part good tinwork. The south shaft is cleared 2 ft. below the back of the 30 fm. level, which we can see is clear some way eastward; but the western level is full of stuff near the shaft. We have commenced to sink a shaft in the eastern part of the mine (Wheal Sisters), on the course of the silver lode.—S. RICHARDS.

SOURTON CONSOLS.—The engine-shaft is now 11 fms. deep; in sinking this we have cut through a large lode, which has let down so much surface water, as to prevent our sinking any deeper with whin barrels. Our next step must be to bring up an adit to take off this water, when we shall be enabled to sink and cut the lode.—B. COOKE.

SOUTH WHEAL MARIA.—We are still breaking tin from the back of our north lode, and saving it for the stamps; this lode is likely to be very productive for tin on the back. The sinking of our shaft has been somewhat retarded by the great water during the late rains; but the country is still of the most promising kind in the bottom of the shaft. As we go down, the branches of copper are more frequent and richer cut, which, together with the quantity of mundic and killas accompanying it, running into the lodes each side of the shaft, and underlaying towards it, induces any practical miner to think that, like the boughs of a tree appearing above the summit of a hill, proves that a trunk is hid below, so these branches, on the same natural grounds, demonstrate the strength and quality of these lodes, which stop them through the country towards the approaching lode in the underly; and, at the same time, as a distant connection, proves a closer tie in the junction beneath.—J. CHANHALL.

ST. AUSTELL CONSOLS.—*Feb. 26.*—We are happy to inform you that we have cut the lode east of the cross-course, leading towards Wheal Hawkins, and find it to be a good lode, about 2 ft. wide, containing malleable and grey ores, worth at present 15½ per fm., with every prospect of improvement.

On the back of the lode, the lode is 18 in. wide, worth 6½ per fm. The 100 fm. level, west on ditto, the lode is 18 in. wide, worth 7½ per fm. The 85 fm. level, west on ditto, the lode is 6 in. wide, unproductive. We have taken the men from here, and also from the south cross-cut, at the same level, and put them to sink a winze below the 70, to make a communication to the 85. The 85, west on ditto, the lode is 2 ft. wide, still to the north, and the new whin is to be finished without delay. The sale of ore for one of the months now brought to account was smaller than usual, which reduces the profit for the two months; but the sales have since kept up, and Capt. Charles Thomas, our inspecting captain, gives it as his opinion that “your present dividends can be kept up without any unfair working, only perhaps you may do well to take a part of the amount in hand to pay for the new whin.” After making the usual dividend there will be a sufficient balance left to pay for the said whin. South Caradon adventurers are also indebted to us for ores broken within our boundary—we have a further reserved fund invested in railway shares.

WEST WHEAL JEWEL.—*March 2.*—The ground in the 115 cross-cut south is much the same for driving as when last reported. The 100 fm. level, east on Wheal Jewel lode, the lode is 18 in. wide, worth 6½ per fm.; the 100 fm. level, west on ditto, the lode is 18 in. wide, worth 7½ per fm. The 85 fm. level, west on ditto, the lode is 6 in. wide, unproductive. We have taken the men from here, and also from the south cross-cut, at the same level, and put them to sink a winze below the 70, to make a communication to the 85. The 85, west on ditto, the lode is 2 ft. wide, still to the north, and the new whin is to be finished without delay. The sale of ore for one of the months now brought to account was smaller than usual, which reduces the profit for the two months; but the sales have since kept up, and Capt. Charles Thomas, our inspecting captain, gives it as his opinion that “your present dividends can be kept up without any unfair working, only perhaps you may do well to take a part of the amount in hand to pay for the new whin.” After making the usual dividend there will be a sufficient balance left to pay for the said whin. South Caradon adventurers are also indebted to us for ores broken within our boundary—we have a further reserved fund invested in railway shares.

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THE MINING JOURNAL, AND

WHEAL FRANCO.—March 8.—The tribute pitches in this mine are going on favourably, and the men making wages; there is a large ore lode in the 32 fm. level driving east; in the winze, 8 fms. behind the end, between this level and the 20 fm. level, there is a good lode. Spy's shaft is down 5 fms. below the 32; a rail road is laying from Spy's shaft to the dressing floors; the wheel pit is nearly finished for the stamp wheel from the old mine, which, when completed, will add considerably to the returns, as the halvans have increased lately. The produce of the ore has improved from the greater care taken in saving the ore underground, from the work being set on tribute instead of tutwork.

WHEAL MARY CONSOLS.—Feb. 25.—The new 63 inch cylinder engine commenced working on the 15th ult., and works admirably well—equal to any engine we ever saw; and we are persuaded that the direct acting will supersede the indirect engines, as being more simple and less expensive. The 30 feet wheel and drawing machine are in course of fixing, and will be ready to work in a short time. We have not made that progress in draining the mine that we should have done had the castings been delivered from the foundry as soon as wanted. The water is drained to the depth of 25 fathoms under the adit level; and the bearers, cistern, and part of the plunger lift are fixed. The bottom castings for this lift were not delivered on the mine until the 18th instant. The lift will now be fixed without delay. We have examined the back of the 25 fathom level for about 250 fathoms in length: great excavations are made on the course of the lode; where it was found productive the lode was large, and where poor rather small. We have been informed by miners, who worked in and above this level about 16 years ago, that the lode produced many hundred tons of copper ore, and that some of the bunches were from 5 to 6 ft. in width. From this lode there is a cross-cut extended 12 fathoms north to another lode which has been driven on east about 12 fathoms. There is a sink in the bottom of this level, where we are informed they had a bunch of ore. We believe this to be a lode discovered in a cross-cut to the south of Wheal Sisters great south lode. The cross-cut referred to above (at the 25 in Mary Consols) is driven 12 fathoms north beyond the lode towards another large promising lode about 4 feet in width, discovered in a north adit level, and supposed to be Wheal Sisters lode. At the Lampen mine the lead lode so called has been intersected at the adit level, but instead of lead we find it composed of quartz, capel, mundic, and a mineral with which we are not acquainted, the whole spotted with yellow copper ore; it is about 2½ feet wide, and underlaying 2 feet per fathom. This lode to the south, as well as the large one above to the north, are parallel to the Wheal Mary lode on which the engine shaft is sunk, and can both be worked from it by cross-cuts, a great advantage for their early development. The flat rods are made, and other preparatory works are in progress for working the south lode of Lampen. The carpenters have contracted to complete the rods, bobs, horse whin, &c., for the sum of 10/-

JAMES NANCE. HENRY TAYLOR.

At a meeting of adventurers, held at Liskeard, on the 25th ult., the accounts—showing balance against the mine of 1229. 12s.—having been examined, allowed, and passed, it was resolved, that a call of 6/- per share be made, payable at the Devon and Cornwall Bank, Liskeard.

TEOLAND CONSOLS.—Feb. 21.—I beg to inform you that Croker's engine-shaft is sunk 50 fms. under the adit level, and about 70 from surface. The pitwork is completed to the bottom thereof, and the shaft planked and divided nearly to the same depth; so that we shall soon be in a position to cut the plat, and cut and drive on the lode at the said 50 fm. level. We have in the present week added 4½ fms. in height to the column of the pressure engine, and erected launders, &c., for the conveyance of water to the same. We are now again in full course of working, and hope by this additional power to sink 70 fms. under the adit level. The 80 fm. level is driven east of Croker's shaft about 12 fms.; the lode in the present end consists of peat, quartz, and mundic, spotted with yellow copper ore. The adit level is driven north of Croker's shaft 86 fms., and about 10 or 12 fms. beyond the point where it was expected to intersect Cock's lode; the end is at present passing through an elvan course.

—THOMAS TRELEASE.

FOREIGN MINES.

COPIAPO MINING COMPANY.—The following report for the month of August, dated Copiapo, Sept. 29, was received on the 26th ult.:

CHICO COPPER MINE.—Our prospects are improving; the vein in the 20 fm. level, east of Harman's shaft, is still good, and promises to continue so. In a winze that we are sinking in the 30 fm. level, west of Harman's shaft, on a south vein, we have broken some very pretty ore in the last month, the quantity as yet is not great, about 3 tons, but I entertain very high hopes that the rich part of the lode will be found wider in depth, and that this, though hitherto wrought to a very limited extent, will be found as productive as some of the other veins that have given so abundantly in the mine in former years. In the winze, west of Victoria shaft, the vein is still large, but the rich part is much narrower than when last reported on, about 4 in. wide; but the vein being large, soft, composed principally of very pretty gossan, and the ore rich, offers very great inducements to pursue it, in hopes of finding, and not far distant, the rich part as large, if not larger, than it was reported last month. All the other parts no material alteration.

SAN PEDRO COPPER MINE.—At this mine the prospects are not less cheering than when last reported on; for, although some of our old pitches, or stopes, whence we have derived the principal part of the produce for the last year, are becoming exhausted, we are laying open new ground that is of great value, not that the vein is larger, or the ore more abundant, but the quality is considerably improved, as you must have perceived from the different workings now in operation. In a level not more than 10 fms. below the surface, we have driven through about 20 fms. of good ground, with a vein containing black oxide and yellow sulphuret of copper, about 20 in. wide on an average, and produce more than 30 per cent. We expect, in a few days, to intersect the lode several fathoms below this level, where I believe we have a good bunch of rich ore; for the vein in the bottom of the level has throughout the 20 fms. been larger than in the back or ceiling, so that I have great hopes of being able, in my next, to give you very satisfactory and cheering accounts of this mine. Product for August at San Pedro, 72 tons; Chico, 36—total, 108 tons.

PAMPA LARGA SILVER MINE.—In my last I had informed you that we had, in clearing out some old works, discovered an arch, exhibiting in one part of it good silver ore; we have now commenced driving a level through it, and shall, in the course of a month, ascertain what it is likely to give. In driving north, about 15 fms. below the adit, where the vein looked very promising, we have communicated with some more old workings, filled with rubbish, which ought, in my opinion, to be cleared out at once, it being so uncertain at what point the ancient miners worked last. A mine worked so extensively, and then filled up in such a manner as this is, even to the surface, I never saw before. At the 20 fm. level, near the shaft, where the lode had a pretty appearance, finding that it had not been broken down so as to exhibit both its walls, we put a bunch to cut across it, and, although he had opened three veins, has not yet arrived at the wall; such is the immense size of the vein in places, and, in my opinion, it is very important that both walls of such a vein be discovered. It is a matter to me of deep regret, that we have not yet, in clearing the old works, or in any of our other operations, found anything sufficiently good to remunerate the owners; but, such is my opinion of this mine, that were shares to be obtained in Pampa Larga, I would risk my little all; and even should I prove unsuccessful, I should begin the world again, without any unpleasant reflection.

NANT-A'-NELL MINING COMPANY.—Having received several inquiries respecting the progress making with this undertaking, we have pleasure in publishing the annexed report, for February, from the manager, Mr. P. P. Couch:—

Enclosed is the cost sheet for February, 1846, by which you will perceive that there was no contract work, except a small bargain of 3/-; this bargain arose in consequence of Budge's misdirecting the level from the lode. He, Budge, formerly did a similar thing in the eastern end and lost the lode, and I was obliged to turn the level, and thereby again found the lode. Whilst I was in London I ordered John Thomas, with three other men, to clear out some old galleries above our levels, at which we are working—these, judging from appearances, contained large quantities of lead—as in some places, the ground is all worked away, down to our at present, bottom level of the old mine, 50 fms., under which the new deep adit is intended to come. One of the levels, above our eastern end, I consider promising, and requires to be driven 6 or 9 ft. to meet the cross branch, which made the lead in the level below, of which Budge wrote some time since, and upon which branch we intend making a winze (a small shaft), for the convenience of working, giving air, &c. The rise, I have let from the bottom level upwards, to be carried 6 ft. long, 3 ft. at 2/- per fm. and a tribute, 5/- per ton, of such lead as they may produce therein—two men are here working, and have, in their estimation, produced 5 cwt. of lead the last week. I have also let the level above for 6 or 9 ft. at 2/- per fm. to cut across through this branch or vein; after which I intend to sink, to meet the other men, giving them also a tribute on the lead they may raise, by which our winze will, I hope, pay its way, and also open tribute ground, &c.

FROM CORRESPONDENTS.

WHEAL VERVALE LEAD AND SILVER MINE.—situate in the parish of Combminster, Devon, about two miles east of the Old Combebarrow Mine. The sett extends over Vervale estate, and the whole manor of Tatiscombe, being about a mile in length, and three-quarters of a mile wide, in which are five parallel north and south lodes, three of them have been partially worked, and are large and very promising, composed of flocan, spar, mundic, jack, and stones of silver-bearing ore. The shaft sunk by the late company is on the side of the hill, and behind the lode at the 20 fm., or bottom, level, in which they have driven 21 fms., which is only 18 fms. from the surface; it is, therefore, necessary to sink a new shaft further down the vein, which would take the lode 50 fms. deep, to do which it will be necessary to remove the wheel where more streams unite, so that sufficient water can be obtained at all seasons to drive the same, when it is considered sufficient power will be given to carry out the works contemplated; the lode appears to have improved in depth, the ground being easy, and the valley into which the lodes are running (which will be taken advantage of in the new shaft), indicates everything favourable to practical observation. The sett is divided into 2000 shares, and a lease granted for 21 years, at a moderate sum, or since, of 1.15/-.

WHEAL GILL.—There is now every appearance to warrant the belief that this mine will, in a few months, stand equal to the best in the Caradon district, every inch driven in the 10 fm. level improves; the lode here, 4 ft. wide, is rich in copper, and will very nearly pay the current expenses upon the mine; when this same lode is cut at the 40 fm. level, which will very soon be done, there is no doubt whatever but that she will at once pay dividends, and the patient shareholders will be at last amply rewarded. Various other lodes in this extensive sett are continually being discovered.

WHEAL BLENCOWE.—This mine is situated in the parish of St. Stephen's (near St. Austell), about a mile south-west of the church, in a locality known for ages past to have been productive of quantities of tin. The present company obtained the sett about 12 months since: the lode now in the course of working was discovered from the "old men's workings." An adit had been driven to a considerable extent previously, but the lode had not been seen below the adit level. An engine-shaft was immediately sunk, and not an inconsiderable quantity of tin raised, and the sales have since averaged about three tons of tin per month, making from 55/- to 60/- per ton. The lode was first cut in the 10 fm. level, and found to be productive of excellent work; it has since been cut in the 20 fathom level—the lode has been cut into 4 feet (but they are not yet through it), and found to be exceedingly rich. A water-wheel has been erected, which, in addition to keeping the water, works six heads of stamps; another wheel also works the same number of stamps, and these 12 heads have produced about three tons of ore per month, which shows some degree of the quality of the lode. Twelve heads of stamps, in addition to the above, are now in course of erection, and, it is calculated, that there is as much tin discovered as will take twelve months to return with the whole 24 stamps in full operation. Arrangements are also being made, for obtaining a more abundant supply of water, and, if this can be effected, a wheel of sufficient dimensions can be worked to carry the mine to any desired depth.

BESIDE LEAD MINE (near Truro) is a most promising looking adventure, and, besides the lead already sold, there is about 2000/- worth considered to be now discovered. Capt. William Richards, of the United Mines, is the superintending captain; and Mr. William Carne, of Rosemonday, the purser.

Mr. James Clark has been elected purser of the Great Work Mines, in Germoe, in the room of John Silvester, Esq. (his father-in-law), deceased.

MINING NEAR TA VISTOCK.

[FROM A CORRESPONDENT.]

WHEAL MARIA still continues to return vast quantities of ore, although there is a decrease in quality. On Friday last 1000 tons were sampled, and the quality does not equal her earliest samplings; it is stated that preparations are making for an improvement in dressing the ores. Wheals Fanny and Josiah (her twins) are most promising sets; at the former a considerable quantity of ore is at grass, but no means of dressing it as yet, although dressing-floors, &c., are in course of active preparation. The lode going west into Maria is not so rich as it was.

WEST WHEAL MARIA AND WHEAL FORTESQUE.—Everything like activity is prevailing here, and proceedings are progressing satisfactorily.

TAVY CONSOLS.—A bunch of ore was cut about a fortnight since, containing (it is said) large portions of grey and black ore; the latter certainly predominates, and it is the opinion of some efficient judges that what is represented as grey copper ore will, upon trial, prove to be arsenite of iron. The discovery is an important one, and a great number of shares changed hands, and great desire was manifested to possess them, as long as the ore continued in sight, a re-action took place, but the end is looking kindly again. At the meeting recently held, a call of 10/- per share was made, and a resolution to drive and sink on the lode was made.

WHEAL ANDERTON is assuming a most promising appearance; the end in the 50 fm. level is looking well; and the lode in the bottom of the 40 fm. level contains some fine stones of yellow copper ore.

WHEAL ASH.—Here the most active measures are in progress, for sinking and working this sett effectually; the gossan, which has been laid open on the backs of the lodes, may be considered the finest ever seen in this district, and the several lodes promise well.

DEVON AND COURNEY CONSOLS continues a favourite. They cut a bunch of rich ore last week in the adit level, in consequence shares rose in value considerably, and, by some judicious careful miners, the undertaking is considered as of ordinary promise; the ore alluded to was cut at the junction of two lodes, and is generally deemed a fair indicative of future riches. The two-monthly general meeting is convened for Friday, the 6th, for the appointment of a purser to the mine (in consequence of the resignation of Mr. S. Lang), and other business.

WEST WHEAL FRIENDSHIP.—Is also spoken well of, and the lodes are remarkable for the vast quantity of mundic; in depth there is a great probability of meeting with courses of ore.

CREBRO MINE.—A new lode, parallel to the lode from whence such immense returns were made during the last working, has been discovered. They have been driving on it for a short time in the 12 fm. level, when the lode presented a very kindly appearance; about a week since a change of ground was observed, and this week a fine course of ore has been cut. They are also driving the 24 fm. level to intersect it at that depth.

GEORGE AND CHARLOTTE.—Here they are proceeding but slowly, driving east at the deep adit from the Tamar, and west at William and Mary from the Tavy. They have a pitch working in the shallow adit, and are raising some of good quality. This sett presents unusual advantages, and will be worked cheap; the lodes are large, and of a very encouraging character. The deep adit has been driven about 120 to 130 fms. east, and the lode is about 4 ft. wide, and ore throughout, but not rich.

WHEAL FRANCO.—This mine, which has held out much promise for some time, assumes an unfavourable aspect at present, whether it be in the underground operations, or the surface management, is yet to be seen, but there is something inexplicable in the proceedings; the mine altogether is looking well, and yet a kind of monomania has influenced the shareholders, inasmuch that shares are offered at a considerable price under their estimated value.

ON THE ASSAY OF COPPER ORE.

SIR.—I shall feel greatly obliged by your informing me what flux is used by the Cornish assay-masters, for the estimation of the produce of metal in copper ores, and, apologising for this trouble, I am, &c., J. S.

Liverpool, Feb. 16.

[The fluxes used vary according to the nature of the ore to be assayed, and consist of soda, borax, nitre, flour spar, &c. For full particulars of the various modes of manipulation, we refer our correspondent to the Journals of May 31, July 5, 12, 19, and 26—1845.]

THE STANDARD.

SIR.—Suppose I have copper, assaying 2½ per cent., and see, by your excellent paper, that copper is worth 96/- per ton—How do I find out the mysterious standard? and what the smelters at Swansea will give me for it? Say, it is a matter to me of deep regret, that we have not yet, in clearing the old works, or in any of our other operations, found anything sufficiently good to remunerate the owners; but, such is my opinion of this mine, that were shares to be obtained in Pampa Larga, I would risk my little all; and even should I prove unsuccessful, I should begin the world again, without any unpleasant reflection.

VEREMOS.—In the reply to our Baltimore correspondent, in the *Mining Journal* of the 14th Feb., we have given every information which "Veremos" requires—the "mysterious standard" is there divested of its "mysteries"—the standard being really the value of a ton of fine copper, as contained in any description of ore. "Veremos" must ascertain the "standard value" of the day, which, on the low produce suggested by him, 2½ per cent., we will suppose 128—then, by Rule of Three Inverse, as 128 : 2½ : 100 = 32, the gross value, and deducting 2½ per cent. for returning charges, the net value of a ton of such ore would be 108.

TRAP-ROCK, A MANURE.

SIR.—Having read, in the *Mining Journal* of the 24th ult., a notice thus entitled, wherein the author describes some observations made by himself relative to this subject during a journey into Radnorshire, I beg leave to call attention to some inaccuracies contained in it, which might be calculated to mislead the practical farmer. That certain rocks are valuable as manure, cannot be denied; but it does not follow from this that all are. It is, therefore, necessary to be able to distinguish those which contain fertilising properties from those which do not; and in the paper to which I allude, the author speaks of a method of making this research which would lead to results, or rather conclusions, entirely false. He says, speaking of this rock, "I selected a piece of it, and found it contained a large portion of carbon, I should think from 10 to 12 per cent." But, I would ask, how could he possibly estimate the carbon by calculation? What is to teach him how much to allow for combined water, and how much for carbonic acid? Again, allowing this to be possible, the result which he obtains is undeniably impossible; for, if we calculate the percentage weight of carbon contained in pure carbonate of lime, we find only 11.88, so that a rock containing 12 per cent. of carbon cannot be a trap, nor even carbonate of lime. But the equivalent of magnesia is lower than that of lime, and as this is the only other earth likely to be found in the state of carbonate, the experiments would seem to indicate a double carbonate of these two bases—i.e., as dolomite—so that the analysis, if worthy a shade of credit, would indicate a composition very different from that inferred by the author.

If, on the other hand, the carbon is supposed to exist in the state of anthracite, graphite, or bitumen—the only conjecture which would allow room for the forty per cent. of silica, which he mentions—his method of estimation is equally fallacious; add to which, carbon in this state could not possibly produce any considerable effect as a fertilising agent. Other observations which are equally inaccurate, but less liable to induce practical errors, may be passed over. I, however, agree with this gentleman, that many trap-rocks might be used as manure, if in a sufficient state of division; as a series of careful analyses recently made of specimens of this rock in various stages of decomposition has fully proved, that the changes produced in this substance by atmospheric influences are always attended with the loss of the alkalis which it contains. I should, therefore, think experiments on this subject might be worthy the attention of the agriculturist, who, as a consider-

able choice of rocks of this formation in Cornwall. Its fertilising effects may be distinctly seen in some quarries situated at the head of the hill, a little west of St. Austell, on the Truro road, from whence, I, a few months since, took some specimens for analysis, and hope shortly to be able to furnish the results.

—J. A. PHILLIPS: *Ecole Royale des Mines, Paris.*

P.S.—Since the fertilising properties possessed by this rock depend on the alkalies which it contains, I apprehend its value as a manure is proportional to its facility of decomposition, of which we may form a pretty good idea by observing the effects produced on detached fragments which have long remained exposed to the atmosphere; those varieties which are early decomposed becoming friable, and of a paler colour on the exterior.—J. A. P.

BEDFORD UNITED MINING COMPANY.

The annual general meeting of the shareholders was held at the offices of the company, 61, Old Broad-street, on Saturday, the 28th ult.—W. ALEX. THOMAS, Esq., in the chair.—A report, on the state and prospects of the mines, by Mr. J. H. Hitchins, the manager, the directors' report, together with a general statement of the accounts, were presented and read by the secretary.—It was moved by the CHAIRMAN, and seconded by Mr. J. ANDREW, and carried unanimously.—"That the same be received and adopted."

In accordance with the rules of the company, the retiring directors being eligible for re-election—it was moved by the CHAIRMAN, and seconded by Mr. J. Y. WATSON.—"That Mr. Charles Bailey and Mr. J. F. Harrison, directors, and Mr. R. H. PIKE be re-elected, which was carried *non. con.*—

DIRECTORS' REPORT.

The directors of the Bedford United Mining Company, at the present annual general meeting, present to the shareholders a statement of accounts, to the 31st December last, showing a balance in favour of the company of 1031. 5s. 11d.; by this account it will be perceived that the cash balance at the present time is 124. 3s. 3d.—less than that of the corresponding period of last year; but, at the same time, it must not be forgotten, that during that period, many new operations have been commenced and carried on with spirit, involving a considerable expenditure in the erection of machinery, stamps, &c.; and, in addition to which, it may be mentioned, that the tin raised and paid for during the past year—amounting from 10 to 12 tons, and valued at about 500/- remains to be sold—forming an asset to be added to the above balance for 1845. The report of the mining agent, in addition to the usual weekly reports, will sufficiently show the present state and prospects of the mine, to which the directors would refer—only observing, that the south lode—one of the objects to which attention has been drawn since the last meeting, and for the working of which adequate machinery has been erected, as above alluded to, will now very shortly come into operation, and from the result of which sanguine expectations are entertained. In conclusion, the directors trust that the time is not far distant when a return may be made to the shareholders.

to be passed in winding up its affairs, in which Messrs. Aston, Macatta, R. Thomas, Scott, and Plumptree, took an active part. It was apparent from the conversation which took place, in reply to a question mooted by Mr. Aston, that on the formation of the company, and even up to the eleventh hour, the directors had not taken those measures which were their bounden duty, as regards the leases of the several sets—no fault but that of omission, however, being attributable to them; while the questions raised by Mr. Aston, as that gentleman contended, should have been instituted before any entry was made. We were certainly struck with novel announcements on the part of certain of the proprietors present—one of whom (Mr. R. Thomas) stated that he had had some 14 years' experience, and affirmed that "no mine could unwater its neighbour." We apprehend that gentleman, in referring to his experience, must have had only a surface view before him.

It appeared that, on the 3d of November last, a communication had been made with one of the lords, offering him the materials at a valuation, as in duty bound, or the mine within three months from that period, and this antecedent to any expression of opinion of the shareholders, as to the abandonment of the mine. Such, offer was, however, rejected, and it remained, therefore, for the shareholders to dispose of the materials, which were valued at about £2000, while the debts amounted to £621. 11s. 7d. In the report of the committee, a new company to work the adjoining ground was contemplated, although, as the CHAIRMAN very properly observed, such questions could not be entertained by the meeting—the object for which it was specially convened, being to receive the report of the committee, and to determine on abandoning further proceedings or otherwise. At the same time, he observed that, after what had taken place, it might be the desire of the new company, if such should be formed, to have the management elsewhere than at the present offices; in which case he should be equally ready to lend every aid, at the same time; that if they should not withdraw that confidence they had heretofore reposed, he would not shrink from the responsibility, and should gladly render any assistance in his power. —The discussion, which was of a general character, terminated in a resolution being passed, to the effect that two of the committee do forthwith proceed to Cornwall, and that they communicate with the other three gentlemen named, on subject of the affairs of the company; and that immediate steps be taken for the disposal of the machinery, the question of the formation of a new company to purchase the same, and work the adjoining sett, being considered as forming matter distinct from the objects of the meeting.—Thanks having been given to the chairman, the meeting adjourned.

HARROWBARROW CONSOLIDATION MINING COMPANY.

The two-monthly meeting of the adventurers was held at Plymouth, on Thursday, the 28th ult., when the purser's accounts were examined, and the following resolutions were agreed to.—"That the same being found correct be passed."—The accounts produced showed an—

Expenditure from the commencement of the mine to the end of January, 1846, amounting to	£971 1 6
Liabilities	127 1 2—1098 2 8
Amount of calls paid	£943 10 0
Ore sold, and work done for other mines	40 3 7
Balance due from the company	114 9 1—1098 2 8

It was also resolved—"That notice be given to those who had neglected to pay their calls, that (unless the same be previously paid) their shares will be forfeited at the next general meeting."—That a call of 5s. per 1000th share be now made, of which notice would be given to the adventurers."

The captain's report was read, from which it appears that a very excellent tin lode had been discovered in the northern part of the sett; but, in consequence of the grant for tin not having been completed by the Duchy, it was deemed advisable to discontinue driving it until its completion. The report appears to have given general satisfaction, whilst the purser, S. B. Sergeant, Esq., received the thanks of the meeting for the very efficient manner in which the accounts were kept.

NISTER DALE IRON COMPANY.

The annual general meeting of the shareholders in this company was held, at the office, No. 10, Old Jewry Chambers, on Friday, the 6th instant.

S. P. PRATT, Esq., in the chair.

The report presented to the meeting entered very fully into the proceedings of the company, and its position in a pecuniary point of view—from which we gathered, that the total expenditure was £8,260. 11s. 7d., including the liabilities, estimated at about £18,272L, but against which was to be placed the assets of the company, consisting of stock of iron purchased for conversion, and arrears of calls, amounting in the whole to £16,640L As regards the make of pig iron, nothing had been hitherto effected—the operations of the company having been confined to the manufacture of sheet and bar iron, from the produce of other works, 1500 tons of pig iron having been purchased, and now in course of being manufactured. One blast furnace, however, was in the course of erection at Nister Dale,—and it was proposed to purchase a mineral property of vast extent, on which a blast furnace was now in course of working, as also to erect two other furnaces, whereby the works would be in a position to turn out 200 tons per week, and thus yield a highly remunerative profit on the capital employed: it was confidently expected, that the one furnace, now in course of erection, would be in blast in the month of August, capable of producing 30 tons per week; while the purchase of the property contemplated would not exceed 7000L to 8000L, and the cost of which would be defrayed by the saving effected in the iron smelted on the spot, whereby double profit would be realised in the space of two years, if considered alone as regards the saving effected. As regards the value or properties of the article produced, no question could arise, as its quality in iron and steel had been tested, and it had been found that such was adapted for the foreign and English markets, where a demand might be confidently relied upon.

It was proposed, after a lengthened discussion, that the whole of the shares not having been subscribed for, that the residue—being 628 in number—should be issued on certain conditions, which was in the end agreed to.—Mr. SCALE, the managing director, observed, with reference to the operations at the works, that up to the present time the raw material (pig-iron) had been purchased, while the capacity of the present works might be taken at 200 tons per week, on which a profit of 3L to 5L (varying with the quality) per ton, might be fairly calculated; but assuming that blast furnaces were erected, and the one mentioned purchased by the company, then further profits might be effected by the company smelting their own ores. Two steam-engines, with one of Nasmyth's powerful steam hammers, had been purchased by the company, one of which is now in course of erection, and the other at work; they are of the respective powers of 45 and 25-horse power—the only difficulty attendant being that of securing labour, which was limited. The duty at present imposed by the tariff, or Zollverein, on iron imported into Germany, was after the rate of 9L per ton on sheet iron, and 4L 10s. on bars; but, in his opinion, this duty would be reduced after the period of two years, if not entirely abrogated, as free trade was now making such rapid advances.

In such case, with the knowledge that he possessed of the capabilities of the works, and the probability which presented itself to him of the Germans taking their iron from England, the contracts entered into, to an extent of full 20 times more than they could supply, it was quite clear that unless the company placed themselves in a position to make pig-iron, and thus render themselves independent of England for the German market, but little profit could be contemplated upon the duty being withdrawn, but having the power of manufacture from the raw material, with ample resources of iron ores (staline and other ores) and fuel at their command, it would be impolitic were they not, by a trifling further outlay, to place themselves in a position, so as to secure the home trade, and thus insure a highly remunerative return. It was to be observed that as regards the coke heretofore used, although such had been attended by a cost nearly three times that which would be incurred in this country, that one-third, or like proportion, was only necessary in the reduction of pig-iron.

In the course of the proceedings, in reply to a shareholder, the CHAIRMAN stated, that the iron in stock, a valuation having been made on 31st Dec. last, was £3982. 11s. 9d., exclusive of any excess or profit arising on its manufacture; and in reply to observations, as to the prudence of extending the works by a further outlay of capital, it was stated, that with the limited make of pig-iron in Germany, advanced prices would be required by the smelters; and the object of the company should be to compete, and place themselves, at the same time, on a firm footing, and independent position. From accounts submitted to the meeting, it appeared that the operations of the company, although of a confined nature at the present moment, were attended with profitable results, and a profit of from 7000L to 8000L per annum might be readily ensured. This profit is based upon the present make of 50 tons per week, while the full power of the works is equal to 200 tons, and upon the price paid for English and German pig-iron delivered at Nister. A resolution to the effect, authorising the purchase of the mining property and blast furnace mentioned in the report was passed, as also a power vested in the directors, to offer the remaining unallotted shares to the public, with a guarantee on the part of the company of 5 per cent. interest per annum for the next three years ensuing, on the amount paid thereon.—Of the directors who retired by rotation, Dr. Skrimshire, of Peterborough, was re-elected; and John Charritte, Esq., who is a considerable shareholder, was elected in the room of William Hopkins, Esq., of Cambridge; John Wheaton, Esq., was elected as auditor.—The thanks of the meeting were given to the chairman and board of directors.

WHEAL WALTER MINING COMPANY.

The first general meeting of the shareholders was held at the offices of the secretary, King-street, Cheapside, on Tuesday, the 8th inst., in accordance with notice convening the same. The attendance was full, and the proceedings of the meeting were conducted with much animation and interest. A short time after the hour appointed, the shareholders called Peter DAVEY, Esq., to the chair, who, on responding to the call, expressed his readiness to perform the duties, at the same time regretted a gentleman (Mr. Edwards) was not then present, who, being more conversant with mining, was better qualified than himself; he would, however, accede to the wishes of the meeting, and act to

the best of his ability.—The CHAIRMAN considered that, as some of the rules for the regulation of the company had been subjected to some slight alteration, that it would be advisable to read the same over, and then to take each rule in order, to discuss any remark or objection that might be made, and thus enable each shareholder to express his opinions.—The SECRETARY having read the rules, which were to the entire satisfaction of the meeting, they were passed unanimously.—The SECRETARY then proceeded to read the reports from the several mining agents who had been appointed to inspect the sett, of which the following are extracts:—

Captain Jonathan Davey states—"At a depth of six fathoms the lode discovered in Wheal Walter has produced some fine specimens of copper, but I have not seen any produce of lead from it; but the quantity of flockan, prian, mundic, &c., indicate that metal; still the instance of Wheal Maria being composed of much the same material, proves it more congenial for copper. In conclusion, I beg to remark, that a more promising sett unexplored I have not seen. Its extent and locality for shipping the ores and getting the materials is very advantageous."

Captain J. B. Clymo and Captain Penrose say—"This sett (Wheal Walter) is about one mile in length, on the course of the lode, and about a mile from north to south. The stratum is soft blue killas. There is a lode, about 4 ft. wide, near the centre of the sett, composed of calcareous spar, with flockan and large proportions of mundic, impregnated with copper ore. The lode has also been discovered at surface about 100 fms. east, in the farm yard. About 50 fms. north another lode has been opened on, which is 2 ft. wide, of a very promising character, and, we think, are well worthy of trial, and that their present indications warrant their being extensively developed."

A deputation from the shareholders, who had been down to the mine, stated to the meeting, that having engaged the services of a well known practical mining agent, who after dialling the lodes, employed a number of men to open on the lodes referred to in the above reports, and in doing so the south lode was found to be from 18 to 20 ft. wide, running south-east and north-west of the character represented, and which is likely to make copper at a shallow level. About 40 fms. further north, another lode was discovered about 4 ft. wide, and 6 fms. still further north, a third lode of the same size, and precisely the same character as the first lode. Both these lodes run parallel with the south lode, and were opened on for upwards of 150 fms. in length, and it was recommended that a level be driven up at the lowest part of the sett, and a cross-cut driven towards the proposed engine-shaft, and intersect all the lodes at a depth of 6 or 7 fms., which may also lead to the discovery of other lodes. There are several cross-courses and lodes discovered in the sett, which have not as yet been opened upon, but are considered by practical miners very promising; and the strata, which is of soft blue killas, is very congenial for the production of copper ore."—These gentlemen produced several fine stones of copper, which they took from the lodes during their examination of the sett, as well as various portions of the lodes, showing the nature and character of them.

These reports having met the approbation of the shareholders, it was resolved—that these opinions and reports be entered on the minutes:—That Messrs. P. Davey, John Edwards, E. F. Dayrell, J. Maitland, Major J. R. T. Graham, J. D. Poole, Henry Smith, J. J. Hays, J. W. Lay, and W. Morrison, be the committee of management:—That Mr. Wickes, the purser, be requested to call in the assistance of Capt. J. Davey, and to employ as many men as may be necessary in driving a level towards the engine-shaft, and doing such other useful work, until a permanent captain is appointed; and that the committee propose to pay him 2L 2s. per month for superintending the labour, and setting and measuring the work:—That the purser be requested to give notice of the said call of 5s. per share be paid to the Union Bank of London, on or before the 4th day of April next:—That Mr. Crofts be appointed secretary to the company.—The thanks of the meeting having been given to the CHAIRMAN, the shareholders separated, highly pleased with the flattering and encouraging prospects of their undertaking.

WEST CORK MINING COMPANY.

The half-yearly general meeting of the shareholders in this unfortunate concern, was held on Thursday, the 5th inst., at the George and Vulture Tavern, which promises to be nearly the last of these periodical meetings, judging from the report and statement of accounts presented.

D. W. WITTON, Esq., in the chair.

The report presented to the meeting entered very fully into the proceedings of the company, and its position in a pecuniary point of view—from which we gathered, that the total expenditure was £8,260. 11s. 7d., including the liabilities, estimated at about £18,272L, but against which was to be placed the assets of the company, consisting of stock of iron purchased for conversion, and arrears of calls, amounting in the whole to £16,640L As regards the make of pig iron, nothing had been hitherto effected—the operations of the company having been confined to the manufacture of sheet and bar iron, from the produce of other works, 1500 tons of pig iron having been purchased, and now in course of being manufactured. One blast furnace, however, was in the course of erection at Nister Dale,—and it was proposed to purchase a mineral property of vast extent, on which a blast furnace was now in course of working, as also to erect two other furnaces, whereby the works would be in a position to turn out 200 tons per week, and thus yield a highly remunerative profit on the capital employed: it was confidently expected, that the one furnace, now in course of erection, would be in blast in the month of August, capable of producing 30 tons per week; while the purchase of the property contemplated would not exceed 7000L to 8000L, and the cost of which would be defrayed by the saving effected in the iron smelted on the spot, whereby double profit would be realised in the space of two years, if considered alone as regards the saving effected. As regards the value or properties of the article produced, no question could arise, as its quality in iron and steel had been tested, and it had been found that such was adapted for the foreign and English markets, where a demand might be confidently relied upon.

It was proposed, after a lengthened discussion, that the whole of the shares not having been subscribed for, that the residue—being 628 in number—should be issued on certain conditions, which was in the end agreed to.—Mr. SCALE, the managing director, observed, with reference to the operations at the works, that up to the present time the raw material (pig-iron) had been purchased, while the capacity of the present works might be taken at 200 tons per week, on which a profit of 3L to 5L (varying with the quality) per ton, might be fairly calculated; but assuming that blast furnaces were erected, and the one mentioned purchased by the company, then further profits might be effected by the company smelting their own ores. Two steam-engines, with one of Nasmyth's powerful steam hammers, had been purchased by the company, one of which is now in course of erection, and the other at work; they are of the respective powers of 45 and 25-horse power—the only difficulty attendant being that of securing labour, which was limited. The duty at present imposed by the tariff, or Zollverein, on iron imported into Germany, was after the rate of 9L per ton on sheet iron, and 4L 10s. on bars; but, in his opinion, this duty would be reduced after the period of two years, if not entirely abrogated, as free trade was now making such rapid advances.

In such case, with the knowledge that he possessed of the capabilities of the works, and the probability which presented itself to him of the Germans taking their iron from England, the contracts entered into, to an extent of full 20 times more than they could supply, it was quite clear that unless the company placed themselves in a position to make pig-iron, and thus render themselves independent of England for the German market, but little profit could be contemplated upon the duty being withdrawn, but having the power of manufacture from the raw material, with ample resources of iron ores (staline and other ores) and fuel at their command, it would be impolitic were they not, by a trifling further outlay, to place themselves in a position, so as to secure the home trade, and thus insure a highly remunerative return. It was to be observed that as regards the coke heretofore used, although such had been attended by a cost nearly three times that which would be incurred in this country, that one-third, or like proportion, was only necessary in the reduction of pig-iron.

In the course of the proceedings, in reply to a shareholder, the CHAIRMAN stated, that the iron in stock, a valuation having been made on 31st Dec. last, was £3982. 11s. 9d., exclusive of any excess or profit arising on its manufacture; and in reply to observations, as to the prudence of extending the works by a further outlay of capital, it was stated, that with the limited make of pig-iron in Germany, advanced prices would be required by the smelters; and the object of the company should be to compete, and place themselves, at the same time, on a firm footing, and independent position. From accounts submitted to the meeting, it appeared that the operations of the company, although of a confined nature at the present moment, were attended with profitable results, and a profit of from 7000L to 8000L per annum might be readily ensured. This profit is based upon the present make of 50 tons per week, while the full power of the works is equal to 200 tons, and upon the price paid for English and German pig-iron delivered at Nister. A resolution to the effect, authorising the purchase of the mining property and blast furnace mentioned in the report was passed, as also a power vested in the directors, to offer the remaining unallotted shares to the public, with a guarantee on the part of the company of 5 per cent. interest per annum for the next three years ensuing, on the amount paid thereon.—Of the directors who retired by rotation, Dr. Skrimshire, of Peterborough, was re-elected; and John Charritte, Esq., who is a considerable shareholder, was elected in the room of William Hopkins, Esq., of Cambridge; John Wheaton, Esq., was elected as auditor.—The thanks of the meeting were given to the chairman and board of directors.

WHEAL PENCORSE MINING COMPANY.—A meeting of the adventurers was held at Farquharson's Hotel, Truro, on the 23rd ult.—W. CARNE, Esq., in the chair.—Mr. W. BASSETT proposed, that, in consequence of the continued disagreement between Captains Champion and Stevens, they both be discharged from further attendance; and that Mr. M. Bassett be requested to seek, and appoint, an efficient captain—subject to the approval of the adventurers at their next meeting to be held on the 14th April.—The following report from Capt. Bryant (Mr. Carne's agent) was read to the meeting:—"In conformity with the request of Mr. M. S. Bassett and the adventurers, I have inspected the Pencorse Mine, and beg to hand you the following as my report:—I find there has been opened on what is called Carne's lode upwards of 100 fathoms, in which distance there are several bunches of jack, and some good stones of lead; the lode averages from 6 inches to 2 feet 6 inches in width. In the east end there is a lode, spots of copper ore, and some good bits of lead. In the west end the lode is about the same size—flockan, jack, mundic, and copper ore. There have been from 50 to 60 fathoms opened on a cauter lode, in which there have also been several bunches of jack, and some good stones of lead. This lode was expected to have intersected Carne's lode a few fathoms east from the present end on the latter, but, from the direction it is now taking, it cannot do so for some considerable distance. I would recommend that your adit ends east be continued, and west on Carne's lode, as this may be expected to intersect a north and south lode, in about 20 fathoms. The lodes in the east ends are looking better than for some time past. From the appearances of the lodes wrought on, which are of a promising character, and there being other lodes which you have not seen, I consider Pencorse Mine may be said to be a fair speculation.

DISCOVERY OF IRON-STONE AT PATRICROFT.—In sinking the deep pit for coal at Patricroft, near Manchester, a bed of iron-stone, three feet in thickness has been found, at a depth of 300 yards, which has since been analyzed, and found to contain no less than 80 per cent. of pure iron. A large iron works will be commenced immediately.

MINERAL LAWS AND CUSTOMS IN DERBYSHIRE.—The lead miners of the High Peak are perhaps not generally aware that an important alteration in the mode of obtaining possession of mines for debts due thereon has lately been introduced at the instance of the head barmaster. Hitherto the custom has been, first, to arrest the mine, and if the debt were not then paid or disproved on trial, the mine became forfeited to the use of the creditor. The alteration alluded to, which would certainly afford a more summary remedy for the recovery of debts of this description, is simply to reverse the mode of procedure, by taking possession of the mine first, and arresting afterwards. In attempting, however, to carry the new law into effect in Calver's liberty on Saturday last, the party, although acting in the presence, and by the orders, of the barmaster of the adjoining liberty, narrowly escaped rough usage from the miners, who look upon the new law as an outrageous innovation upon their ancient rights and customs.—Correspondent of Derbyshire Reporter.

MINE ACCIDENTS.

Junction Forge, Aston-road, Birmingham.—J. Brown was killed at Mr. Sims's South Hetton Colliery.—J. Halliday was killed while working in the north pit Ludgate.—J. Inch was killed by the falling of a rock.

Horseley Colliery, Tipton.—J. Jones was killed by a fall of coal.

Blaenavon Iron Company.—W. Oram was injured by a fall of mine upon him.

Osier Bed Colliery, Bilton.—E. Dorrell was killed by a fall of coal.

Transactions of Scientific Bodies.

MEETINGS DURING THE ENSUING WEEK.

Society.	Address.	Day.	Hour.
Asiatic	14, Grafton-street	Saturday	9 P.M.
Royal Botanical	Regent's-park	Saturday	4 P.M.
Geographical	3, Waterloo-place	Monday	8 P.M.
British Architects	16, Grosvenor-street	Monday	8 P.M.
Medical	Bolt-court, Fleet-street	Monday	8 P.M.
Medical and Chirurgical	53, Berners-street	Tuesday	8 P.M.
Civil Engineers	25, Great George-street	Tuesday	8 P.M.
Zoological	11, Hanover-square	Tuesday	8 P.M.
Society of Arts	Adelphi	Wednesday	8 P.M.
Geological	Somerset-house	Wednesday	8 P.M.
Graphic	Thatched-house Tavern	Wednesday	8 P.M.
Pharmaceutical	17, Bloomsbury-square</td		

PROGRESS OF FRENCH MINING INDUSTRY.

[FROM OUR PARIS CORRESPONDENT.]

At the recent great iron fair of La Chandeleur, at Besançon, the demands for these sorts of cast-iron were limited, and no variation took place in prices. Many furnaces were stated to have been obliged to suspend operations, owing to the floods; but the stocks on hand were not exhausted. In iron, prices kept up. Cast-irons were expected to decline, in course of a short time, as much as 15 fr. or 20 fr. from existing prices. This is, in fact, the necessary consequence of the excessive rate to which they were pushed at preceding fairs.

An immense establishment is about to be erected in the neighbourhood of Lyons, for the manufacture of locomotives, engines of vessels, and steam machinery of every description. The want of a manufactory of the kind has long been felt in the south of France, which has hitherto been compelled to obtain all its steam machinery from England, or from distant parts of the kingdom. The general assembly of the Vieille Montagne Company is advertised to be held on the 14th April, at Angleur, near Liege, Belgium. Holders of 20 shares, at least, will only be admitted.

Allusion was made, in a recent letter, to the fact, that M. de Boissy was about to transfer his forges, &c., to a company, which was to work them on a grand scale. The company is now definitely formed; it takes the name of *Société des Forges du Centre*. Its capital is 15,000,000 fr., divided into 15,000 shares, of 1000 fr. each. Its principal seat of action will be at Vierzon. It is placed under the financial patronage of the eminent banking house of Ganneron and Co., of this city. The forges that it will possess are those of Boissy, Vierzon, Rosières, Bourges, Clavières, l'Isle, Virelton, Le Noyer, Les Lavaïs, &c., &c. The provincial newspapers appear to be delighted at the formation of this great company, and predict immense success for its great enterprise. There is no doubt, that the company will give employ to thousands of persons, and cause immense sums of money to be spent in the province of Berry. There is no reasonable doubt, also, that it will attain great success, if its affairs be conducted with only ordinary prudence, for on its possessions there are large quantities of iron ore, fuel is abundant, and the communications easy and cheap; above all, there is such an immense demand for iron just now, that every bit that can be manufactured is sure of a ready sale, at more than remunerative prices. Besides, the great success of the forges of Decazeville are a certain augury of its prosperity, for they, with infinitely fewer natural advantages, have enriched the gentlemen connected with them.

The new *Compagnie des Hauts-Fourneaux et Forges du Rhone et de la Loire* is continuing to advertise itself very extensively in the newspapers. It proposes to occupy itself principally with the fabrication of rails, and other articles, for railways. It will be established in the midst of the richest coal county of France, and will be able, it says, to obtain fuel at one-tenth of what the iron establishments in other parts of France are compelled to pay; whilst the railways and canals, which abound in the neighbourhood, will afford it unusual facilities for the disposal of its products. The capital is fixed at 3,500,000 fr., in 7000 shares of 500 fr.; 125 fr. per share will be required within eight days after the definitive constitution of the company. Other companies, similar to the above, as I have said before, are being organised, with the view of supplying the vast quantities of iron that are required by the railways, and of obtaining the immense profits resulting therefrom. In point of fact, the attention of capitalists is just now being devoted almost as much to mining matters, and the establishment of furnaces, as to the formation of railways. And it is very natural that it should be, for otherwise it is perfectly certain that, in two or three years time, France would possess several hundred miles of railway, without having a single rail to lay down. Notwithstanding, however, all the outlay that is about to be made, and all the trouble that is about to be taken, it is not to be doubted, that France will never be able to produce herself the millions of tons of iron that her railways will require. I have said the same thing 20 times before, and shall, perhaps, have to say it 20 times again.

The *Compagnie des Mines de la Grande Combe* will hold a general meeting on the 29th March, and an extraordinary meeting on the 24th May. Some details have been published relative to the mines of rock salt, recently discovered in Algiers; but they are not of a nature to call for translation. As, however, an official report on them is promised, it is probable that I shall have to return to the subject.

The movement in favour of free trade is developing itself more than might have been expected, and is obtaining every day an accession of partisans and adherents. The worst of it is, the French have got no perseverance. They act always from the impulse of the moment, and when the impulse dies away their energy ceases. So it will, no doubt, be with this free-trade movement. It will make a great sensation for awhile, but when its novelty shall have worn off, will cease to excite attention. But, there is no denying, that Sir Robert Peel's measures have caused a great desire for the removal of some of the shackles on commerce, and on no branch of commerce more than on that of iron, and metals. Iron, iron, iron, is the great want of this country just now, as corn is in England; and, accordingly, the most active men in the free-trade movement now afloat, clamour most loudly for a modification of the iron duties. This is clear from the fact, that the free traders have just started a periodical, which they call *Liberte du Commerce*, the first number of which is almost entirely occupied by a reprint of the documents, showing the necessity of a reduction in the duty of iron for the sake of the foreign market.

The difficulties between the Minister of Commerce and the directors of the Lyons Railway Company have been arranged, by the directors reducing their number from 50 to 35, and by complying with the other requirements of the Minister. A royal ordinance is inserted in this morning's *Moniteur*, sanctioning the company as a *Société Anonyme*—that is, giving it a legal existence.—*Paris, March 3.*

DISCOVERY OF A MINE OF ROCK SALT IN ALGERIA.—We have, at various times, noticed in this Journal, the recent discoveries which have been made of iron, copper, and lead mines in the French colony of Algeria. From information received, within the last fortnight, it appears that M. Fournel, engineer-in-chief of mines, has found, by exploring in the eastern part of Algeria, that several valuable rock salt mines exist, and he is making out a detailed report on these new riches of the African soil. Already, in the instructions for the geological exploration of Algeria, directed by M. Elie de Beaumont, and adopted by the Academy of Sciences of the 10th of March, 1838, the intelligent author of this important work had given on this subject some details abounding with interest. One of the most curious facts which the deserts of Africa and Asia present, he observes, is, that the soil is frequently saline, and that chloride of sodium is spread in extreme abundance over the soil in Arabia. The earth in nearly the whole extent of the regency of Tunis, is impregnated with such a large quantity of marine salt, that the greater part of the springs are brackish, and salt springs are far more numerous than fresh water; and it is not at all uncommon to see, when the heat of summer has caused the stagnant waters to evaporate in the low grounds, very extensive portions of land covered with this sort of salt incrustation, which the waters of the winter had dissolved and amassed together. These plains are generally called sibkah or shibkah—that is to say, a space of saline soils. They are generally covered over with water in the winter, and have the appearance of numerous large lakes; but, when they are dry in summer, they resemble large bowling greens or grass plots, covered with the finest verdure. Some of these shibkahs have a hard and solid foundation, without any mixture of earth or gravel, retaining the salt which forms a crystallised bed after the rains. Salt mines or beds of this description, exist near Arzew, and in other localities. In the vicinity of Arzew, a

calities. In the vicinity of Arzou, the water is rather brackish. About two leagues to the south-west of the ancient city, there is an extensive salt lake, which furnishes the greater part of the regency with this mineral, and is inexhaustible; its length is about one league, and fills during the winter with water, and, during the hot season, this water evaporates and becomes crystallised. The Oued-el-Mailach, which is on the eastern frontier of the regency of Algiers; the Serrat, also on the east of the regency; the Hammam-Mellwan, which is at nine leagues to the south-east of Algiers; the saline river of Beni-Abess, which traverses the territory of the Bebas; that of the Urbyah, near Tetteri-Douch; that which comes from Vibbal-Wongar, in the environs of Constantine; the Milah, which falls into the marshes of Shott, opposite Messesah; the Barekah, which runs into Mickowes, and the river Gor-Bata, on the confines of Jered. All these rivers, and numerous other streams and springs of less importance, possess great saline qualities, or are completely brackish. In digging in these salt accumulations, they find various beds of salt, some of only one inch in thickness, and others far exceeding it, which arises from the greater portion of salt which the water has formed in these beds, and impregnated them with it. There exists a number of salt marshes in the province of the Leguan, near the Melesa, on the road from Oran to Tlemcen. Shaw, in his work on the production of salt, also alludes to the saltbeds of

Lowdeah and the Kairouan, the salt pans between Carthage and Gouletta, that of the morass, or marsh, of Shott, and the Sahara, in its vicinity. M. Desfontaines, likewise, mentions that, a few leagues from Koleah, there was a very large salt lake like that of Arzew. According to Shaw, the mountain called Jibbel-Had-Duffa, at the eastern point of the lake Des Marques, or Bahirah-Pharaonae, is entirely composed of salt. This salt is quite different from that of the salt pans, being hard like a stone, and its colour being either red or violet. This mine of rock salt is in the kingdom or beydom of Tunis; but there are several similar ones in the re-gency of Algiers. The salt mining extension is one of great importance to the French Government.

Current Prices of Stocks, Shares, & Metals.

STOCK EXCHANGE. London, November 20, 1863.

STOCK EXCHANGE, Saturday morning, Twelve o'clock.	
Bank Stock, 7 per Cent., 2084	91
3 per Cent. Reduced Anna, 96	4
3 per Cent. Consol. Anna, 305	4
3½ per Cent. Anna, 90	78
Long Annuities, 10½	11-16
India Stock, 104 per Cent.	-
3 per Cent. Consols for Acc., 95	8
Exchequer Bills, 10000, 32 5 p.m.	
Belgian Bonds, 4½ per Cent., 97½	8
Dutch, 24 per Cent., 39	1
Brazilian, 5 per Centas, Now, 82	32
Cuba Bonds, 6 per Cent., -	
Chilian, 6 per Centas, -	
Colombian, 6 per Centa, -	
Mexican, 5 per Centas, 304	
Spanish, 5 per Centa, 264	4
Portuguese, 4 per Cents., 97	
Russian, 5 per Centa., 1074	

MINES.—Business in mining shares has maintained considerable firmness during the week, and from our general mining intelligence it will be found that continual and valuable discoveries are being made in the west of England, particularly in the neighbourhood of Tavistock. The report of the Callington Mining Company will be found in another column, the result of the past year's workings of which has been most successful, and the prospects of the most cheering nature to the shareholders. The Cornwallian Company had an adjourned meeting on subject of winding their affairs, when two shareholders were deputed to proceed to Cornwall to inspect the sets of the company, and that of Mineral Bottom adjoining, which Mr. Stainby has offered to relinquish, on payment of expenses incurred.

RAILWAYS.—The share market during the week has been unusually dull, and even the old established lines have had considerable difficulty in maintaining their prices. This may, perhaps, be accounted for in some measure to the unsettled nature of the Oregon question, but the depression that generally prevails in the money market is the principal cause. The transactions which have been entered into either in old or newly projected lines have been on a very limited scale, and seldom has the share market presented so stagnant an appearance. Foreign shares have experienced the same apathy, and, as will be seen by our share list, but little has been done in any of them, and prices are lower since our last.

Railway business has been rapidly progressing through both Houses and the sub-committees, and a large number of the bills for several of the leading projected lines, having complied with the Standing Orders, have been read a first and second time.

MESSES. LAMOND'S SALES—TUESDAY.—Dutch Hanoverian (2d. pd.), 2d. 4s.; Great Western of Bengal (5s.), 12s.; East Indian (5s.), 19s.; Direct Northern (2d. 10s.), 2d. 3s. 6d.; Gloucester and Doncaster (2d. 2s.), 1s.; North Stafford, Churnet, and Potteries (2d. 2s.), 1s.; North Kent (2d. 10s.), 2d. 13s. 6d.; Jamaica Junction (1d.), 3s.; Vale of Neath (2d.), 21s.; Dublin and Galway (4d.), 3d. 15s.; South Staffordshire Junction (2d. 10s.), 2d. 1s.; South Midland (2d. 2s.), 4s. 1s.; Blackwall Extension (3d.), 3s. 6s.

FRIDAY.—South Midland (2d. 2s. pd.), 3d. 1s.; Direct Northern (2d. 10s.), 2d. 5s.; Liverpool, Ormskirk, and Preston (2d. 10s.), 4d. 11s.; South Wales (5s.), 4d. 10s.; Scottish Midland (5s.), 4d. 10s.; Gloucester and Doncaster (2d. 2s.), 2d. 19s. 6d.; Northern and Eastern (1d.), 17s.; North Wales Mineral, new (3d.), 4d.; London and Manchester—Rastrick's (2. 5s.), 3d. 11s. 6d.; Jamaica Junction (1d.), 3d. 12s.; North Kent (2d. 10s.), 2d. 10s.; Manchester, Buxton, and Matlock (2d. 2s.), 2d. 10s.; Buckinghamshire (2d. 2s.), 1d. 18s.; London and York (2d. 10s.), 3d. 7s. 6d.

London and York (2s. 10s.), 3*l*. 7*s*. 6*d*; Liverpool, Manchester, and Newcastle-upon-Tyne (2*l*. 1*s*.), 2*l*. 1*s*.: Whitehaven and Furness (4*l*.), 4*l*. Dunstable (5*l*. 5*s*.), 5*l*. 5*s*. Calais and St. George's Point (7*l*.), 8*l*. Manchester and Southampton (2*l*.), 2*l*. 4*s*.

Leeds and Dewsbury, and Huddersfield and Goole, are nearly unsaleable.

PRICES OF MINING SHARES

PRICES OF MINING SHARES.							
BRITISH MINES.			BRITISH MINES—continued.				
Shares.	Company.	Paid.	Shares.	Company.	Paid.		
235	Andrew and Nanglles	25 $\frac{1}{2}$	60	256	South Wheal Rose	2	3
000	Barristerown	2 $\frac{1}{2}$	30	256	St. Austell Consols.	6	25
000	Bedford	—	5 $\frac{1}{2}$	1000	Stray Park	43	21
128	Besore Lead Mine	—	35	9600	Tamar Consols	3	6
128	Birch Tor Tin Mine	10 $\frac{1}{2}$	12	6000	Tincrest	7	16
000	Blaenavon	50	40	256	Ting Tang	67	67
000	Bothallock	175	300	128	Tokengury	124	84
120	Brewer	—	25	1024	Trelawney Consols.	1 $\frac{1}{2}$	2
000	British Iron, New, regis.	10	20	5000	Trerigal Consols.	6	34
000	Diffit ditto, scrip.	10	21	256	Treowen Consols	—	170
100	Bunlich Consols	—	30	96	Treasavan	10	300
000	Callington	20	200	120	Treviskey and Barrier	5	75
256	Caradon Consols.	19	30	128	Trewavas	—	10
256	Caradon Copper Mine	9 $\frac{1}{2}$	6	128	Trewoold	12	25
128	Caradon Mines	4 $\frac{1}{2}$	36	4000	United Hills	5	4
128	Caradon United	19	20	100	United Mines	300	900
128	Caradon Wh. Hooper	9	15	128	West Bassett	10	25
000	Carn Brea	15	100	256	West Cardon	20	375
14	Charlestown	—	240	128	West Cargill	2	15
56	Chyphare	—	50	512	West Fawley Consols	40	33
000	Combrinbar	5 $\frac{1}{2}$	—	—	West Kakeworth Consols	—	32
28	Comfort	—	44	256	West Penpendice	—	7 $\frac{1}{2}$
000	Con. Trelto Mining Ass.	34	1 $\frac{1}{2}$	200	West Seton	—	40
28	Conduor	20	28	120	West Trebetherne	5	40
000	Cook's Kitchen	—	8	256	West Wh. Friendship	2	11
000	Copper Bottom	1	—	5845	West Wheal Jewel	11	24
000	Cornubian Lead Co.	3	1 $\frac{1}{2}$	2560	West Wheal Minnow	3	32
28	Cosheen	20	200	2560	West Wh. Mitchell	—	2
000	Craddock Moor	9	65	256	West Wh. Shepherd	—	8
000	Creig Braws	120	80	256	West Wheal Tolgus	21 $\frac{1}{2}$	21 $\frac{1}{2}$
000	Cubert Mine	10	26	256	West Wheal Treasury	12	7 $\frac{1}{2}$
000	Devon & Courtney Con.	1	42	240	Westerwick	3	3
000	Dhurode	2	—	6000	Wicklow Copper	5	17
000	Dolcoath	—	80	256	Wheat Albert	10	12
000	Durham County Coal	45	9	128	Wheat Asland	13	14
000	East Pool	5	55	256	Wheat Bielawno	—	20
000	East Tamar Consols	1	—	256	Wheat Boscawie	3 $\frac{1}{2}$	9
—	East Wheat Albert	—	5	128	Wheat Catherine	5 $\frac{1}{2}$	10
6	East Wheat Alfred	6	12 $\frac{1}{2}$	256	Wht. Cleveland	2 $\frac{1}{2}$	5
4	East Wheat Crefy	—	450	68	Wheat Chilford	—	450
6	East Wheat Kitty	4	—	1024	Wheat Concord	3 $\frac{1}{2}$	3 $\frac{1}{2}$
8	East Wheal Rose	50	1500	256	Wheat Foreside	18	20
3	East Wheal Seton	2 $\frac{1}{2}$	16	324	Wheat Franco	22	50
000	Fowey Consols	—	80	256	Wheat Gill	17 $\frac{1}{2}$	16
000	Galvanised Iron Co.	10	—	1000	Wheat Harriet	—	2 $\frac{1}{2}$
000	Gen. Mining Co. for Ire.	10	4	728	Wheat Henry	—	10 $\frac{1}{2}$
000	Godolphin	—	36	100	Wheat Hope (Zenner)	23	25
000	Gonanenna	19	120	256	Wheat Hope	7	1 $\frac{1}{2}$
000	Gover	23	200	256	Wheat Jane	6	36
000	Gwambridge & St. Aubyn	40	—	256	Wheat Kendall	11 $\frac{1}{2}$	5
000	Great Consols	1600	400	1024	Wheat Martin	—	550
000	Great Calestic Moors	—	11	4000	Wheat Martha Consols.	4	—
000	Great Mitchel Consols	—	2	1024	Wheat Mary	1	—
000	Grogwinion	5	20	256	Wht. Mary Ann	5	30
000	Gunnis Lake	12	3	1024	Wht. Mary (Calstock)	2	4
000	Hallenpreegh	—	50	256	Wheat Mary Consols.	1 $\frac{1}{2}$	14
000	Hanson	—	50	256	Wht. Mexico	3	6
000	Harrowbarrow Old Mine	2 $\frac{1}{2}$	2 $\frac{1}{2}$	256	Wheat Norris	9	12
000	Harrowbarrow Consols	2 $\frac{1}{2}$	2	128	Wheat Pearson	—	5
000	Hawkmoor	3	10	138	Wheat Pollard	9 $\frac{1}{2}$	30
000	Helestone	1	2	138	Wheat Prospect	4	9
000	Heroshot	9	14	128	Wheat Providence	4	—
000	Hibernian	12 $\frac{1}{2}$	1	128	Wheat Reeth	1	60
000	Holm bush	14	26	256	Wheat Robins	13	5
000	Ivy Tor	11	5	128	Wheat Rose	40	20
000	Kirklebrightshire	12	1 $\frac{1}{2}$	—	Wheat Salsbury	13	—
000	Lamehowe Wh. Maria	2	9	512	Wheat Sarah	24	5
000	Lanerath & Penstrifull	—	150	99	Wheat Seton	150	750
000	Larkholes	1	3	256	Wheat Sisters	25 $\frac{1}{2}$	80
000	Levant	—	150	128	Wheat St. Cleer	21 $\frac{1}{2}$	50
000	Lewis	5	6	128	Wheat Trannack	19	25
000	Lodcoff	3	3	900	Wheat Trevavny	7 $\frac{1}{2}$	135
000	Marie Valley	10	74	256	Wheat Trevennan	4	3
000	Mining Co. of Ireland	7	12 $\frac{1}{2}$	128	Wheat Venland	24	5
000	Want-N'-Neh	2	2	256	Wheat Victoria	2	6
000	North Fowey Consols.	10	30	127	Wheat Virgin	—	20
000	North Holm bush	—	15	1024	Wheat Walter	23	4

the ratio of its increase towards the cent
evidence to show that the earth is gradu

RAILWAY SHARE LIST.

RAILWAYS.	Paid	Closing pr. last week.	Closing pr. last night.
Aberdeen	£5	10	10
Amber, Nottingham, Boston, and Kewish Junction	2	2	1
Armagh, Coleraine, and Portrush	1	1	1
Birmingham and Gloucester	100	125	—
Birmingham and Oxford Junction	20	24	24
Bristol and Exeter	70	86	87
Bristol and Gloucester	30	56*	—
Cambridge and Lincoln	5	132	12
Chelmsford and Bury	15	21	20
Chester and Holyhead	50	—	—
Cork and Killarney	25	—	—
Cork and Waterford	25	—	—
Cornwall	50	—	—
Derby, Uttoxeter, and Stafford	25	—	—
Direct Northern	50	—	—
Direct Manchester (Remington's)	207	shares	—
Ditto	55	34	34
Dublin and Belfast Junction	50	—	—
Dublin, Belfast, and Coleraine	10	6	3
Dublin and Galway	4	4	4
Dundalk and Enniskillen	24	—	—
Eastern Counties	142	162	21
East Lincolnshire	14	24	24
Edinburgh and Glasgow	50	74	73
Edinburgh and Perth	3	—	—
Exeter, Yeovil, and Dorchester	25	12	—
Good and Doncaster	20	—	—
Grand Junction (Nottingham and Lynn)	100	215*	215
Great Grimsby and Sheffield	5	9*	—
Great Southern and Western (Ireland)	50	—	—
Great North of England	100	214*	215
Great Western	100	152	160
Guilford, Farnham, and Portsmouth	5	5	4
Hull and Selby	50	107	104
Isle of Axholme	24	12	—
Lancaster and Carlisle	25	55	55
Leicester and Birmingham	204	—	—
Leicester and Bedford	204	—	—
Leicester and Tamworth	204	—	—
Liverpool and Leeds Direct	50	—	—
Liverpool, Manchester, and Newcastle Junction	15	3	3
London and Birmingham	stock.	224	222
London and Birmingham Extension	25	—	—
London and Blackwall	Avg. 161	134	81
London and Brighton	50	63	62
London and Croydon	Avg. 137	154	92
London and Greenwich	Avg. 121	154	92
London and South Western	Avg. 411	64	102
London and York	50	—	—
London, Salisbury, and Yeovil	25	12	—
Londonberry and Coleraine	25	54	48
Lynn and Ely	25	61	—
Lynn and Dereham	25	44	44
Manchester and Leeds	100	133*	130
Manchester and Birmingham	40	77	—
Manchester, Buxton, and Matlock	42	4 pm.	—
Manchester and Southampton	2	28	145
Midland	Stock	120	116
Ditto Birmingham and Derby	Stock	157	132
Midland Great Western (Ireland)	50	—	—
Newcastle and Berwick	25	—	—
Newcastle and Carlisle	100	—	—
Newcastle and Darlington Junction	25	44	44
Ditto New (Bradford)	25	38	38
Newport and Abergavenny	25	—	—
Newry and Enniskillen	25	—	—
Newark, Sheffield, and Boston	25	12	—
North British	25	272	25
North Devon	2	—	1
Northern and Eastern	50	71*	—
North Kent and Direct Dover	50	24	24
North Staffordshire	20	24	24
North Wales	25	33*	33
Norwich and Brandon	20	26	24
Northampton, Banbury, and Cheltenham	2	12	12
Oxford, Worcester, and Wolverhampton	124	14	13
Portsmouth Direct	50	34	34
Preston and Wyre	50	34	34
Rugby and Huntingdon	20	12	—
Scottish Central	25	71	71
Scottish Midland	25	34	34
Sheffield and Manchester	100	131*	130
Shrewsbury and Birmingham	25	3	2
South Devon	25	364	34
South Eastern and Dover	Avg. 351	24	38
South Midland	42	24	37
South Wales	5	52	5
Staines and Richmond	1	12	12
Trent Valley	5	26	26
Vale of Neath	2	22	13
Waterford and Kilkenny	20	30	32
Welsh Midland	24	12	12
Wiltshire, Somerset, and Weymouth	24	2	2
Yarmouth and Norwich	20	28*	22
York and Carlisle	25	22	22
York and North Midland	50	100	98
Ditto Selby	50	74	—

FOREIGN RAILWAYS.

Boulogne and Amiens	20	10	113	102
Bordeaux and Toulouse and Cete (Mackenzie)	20	shares	2	24
Bordeaux, Toulouse, and Cete (Espanola)	20	shares	2	24
Central of Spain	20	shares	2	1
Dutch Rhenish	20	shares	5	68
East Indian	4	14	14	14
Great Northern of France (constituted)	5	15	15	15
Great Western Bengal	2	—	—	—
Great Western Canada	22	shares	3	24
Jameson and South Midland Junction	20	shares	1	—
Louvain and Jemappes	20	shares	4	2
Lyon and Avignon	20	shares	2	2
Luxembourg	4	24	24	24
Namur and Liege	20	shares	4	34
Orleans and Vierzon	20	shares	10	192
Orleans and Bordeaux	20	shares	6	112
Paris and St. Quentin	20	per share	2	—
Paris and Orleans	20	shares	20	52
Paris and Rouen	20	shares	20	42
Rouen and Havre	20	shares	18	30
Sambre and Meuse	20	shares	6	54
Strasbourg and Bâle	14	shares	14	—
West Flanders	4	45	36	—

* Prices obtained from country brokers—no business doing in the London market.

RAILWAY TRAFFIC RETURNS.

Name of Railway.	Lghth. Rw.y.	Present ac- tual cost.	Last Div.	Traffic Returns. 1846	1845
Aberdeen	15	£140,782	24	£173,000	£161
Chester and Birkenhead	15	1,078,851	14	727,000	521
Dublin and Drogheads	32	631,258	4	694,192	509
Dublin and Kingstown	6	249,736	9	616,176	938
Dundee and Airthshire	17	1,523,598	4	274,144	252
Durham and Sunderland	19	302,118	2	756,191	601
E. County & North. & East.	124	4,090,228	5	6313,179	3,611
Edinburgh and Glasgow	46	1,686,296	6	2842,132	2,154
Glasgow, Paisley, and Ayr	51	1,104,773	6	1849,000	1,547
Grand Junction Company	23	806,134	2	784,000	724
Gravesend and Rochester	6	2,597,317	10	—	7462
Great North of England	45	1,296,196	6	—	1,583
Great Western	220	7,177,043	8	15,300,000	13,032
Hartlepool	—	—	1333	0	0
London and Birmingham	176	6,997,065	10	—	14,436
London and Blackwall	4	1,078,851	14	727,000	813
London and Brighton	56	2,653,673	4	3,418,000	2,811
London and Croydon	10	842,592	34	1,212,000	820
London and South Western	93	2,620,724	9	5783,143	4,950
Manchester and Birmingham	31	1,359,062	6	4,186,000	3,346
Manchester & Leeds	51	3,724,869	5	5414,000	6,434
Manchester, Bolton, & Bury	10	905,968	8	945,000	873
Midland Company	179	6,284,631	6	14,876,000	9,053
Newcastle and Carlisle	61	1,137,385	5	1875,000	1,548
Newcastle and Darlington	294	1,156,379	8	2,928,000	1,103
Newcastle and North Shields	7	316,460	5	462,000	364
North Union, Bolton & C.	32	1,060,551	61	—	1257
Preston and Wyre	22	432,614	2	493,000	346
Sheffield and Manchester	19	1,313,225	5	1,089,000	581
South Eastern and Dover	88	4,284,924	34	5,042,72	4,417
Taff Vale	30	611,078	24	939,000	937
Ulster	25	306,203	5	—	522
Yarmouth and Norwich	204	950,037	5	—	191
York and North Midland	53	1,379,291	10	4,457,000	2,116
Yorks and Orkney	82	2,082,916	8	5,559,000	4,920
Yorks and Lancs.	24	1,955,306	9	5,239,000	2,914

* The traffic return of this company is now included in the London and Birmingham.

† Including the Grand Junction Company.

‡ Including the Greenockshire.

§ Included in Manchester and Leeds.

COPPER ORES.

Sampled Feb. 18, and sold at Serpell's Hotel, Pool, March 5, 1846.

Mines.	Tons.	Price.	Mines.	Tons.	Price.

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the total amount of capital; although, it is most true, the company, having obtained an Act of Parliament, had a right to borrow—if they could. Of this sum 110,000*l.* was to be paid in money, and 55,000*l.* was to be taken as paid up shares; and, accordingly, a prospectus was issued, and certain directors, including a worthy alderman of the present day, the clerical tutor of his lordship's sons, a certain gentleman connected with the scholastic agency, and others, as "tools," were put forward, the modicum received by each being confined to a gratuitous gift from Lord AUDLEY of 15*l.* of his paid-up shares, being, in other words, 75*l.* and thus qualifying them, by the shares so appropriated, to an INDEPENDENT seat at the board, whereby they were in a position to sign cheques in favour of his lordship, and the veritable PIKE. Certain reports were made; abuses were said to exist, and, in the first instance, exposed, and public attention drawn thereto through our columns. It was said that we were influenced by parties, or from private motives—however, no matter, it was, we admit, somewhat difficult to get those most interested to entertain the charge; but, in the end, "One and All" found to their cost, that their confidence had been abused, and that a fraud had been perpetrated. Certain legal proceedings in the Law and Equity Courts, and even an appeal to the House of Lords, was the result, and after having well considered the terms on which the Act for regulating the proceedings of the company was couched, it was found that the shareholders were not personally liable for the claim put forward by Lord AUDLEY and his executor, for the residue of the purchase money, which, with interest, amounted to nearly 80,000*l.* and hence the satisfactory result, recorded in our columns of to-day. It is, we believe, some 10 or 12 years since the fraud was perpetrated, and it is not much more than 12 months since that the question was determined in favour of the shareholders. During the greater part of this time, the legal proceedings resorted to continually occupied the attention of some of the principal shareholders, who had been made the dupes, and who had succeeded in ousting the "original" directors, and forming among themselves a new committee, for the protection of the shareholders; and not only was much time devoted, but a serious responsibility incurred, as regards the expenses attendant on the course pursued.

It is now about 12 months since, that it was stated by the chairman at a public meeting, that there was a debt of some 10,000*l.* owing (as a balance of account) to their solicitors, and others, without any funds being in hand, whereby it might be liquidated, and a resolution was accordingly come to (which may be said, indeed, to have been rather an appeal to the shareholders at large, to do that which was right and honourable)—viz., to subscribe in proportion to the interest they might hold, with the view of settling the claim; and this appeal, we are proud to say, has been nobly responded to—upwards of 8500*l.* having been voluntarily subscribed, while the balance is in course of payment, and thus the company will be relieved, and all parties released from responsibility, are another six months elapse. We now arrive at a point which must be gratifying to all, whether interested or otherwise, as regards the company. It is well known, that in the early days of the exposure of the fraud, and measures being adopted by the shareholders for their protection, Mr. W. R. VIGERS was the leader—he it was who was to be found in the foremost ranks; and not only did he expose himself to the fire of the enemy, but, as a bold, yet cautious, general, he so marshalled his forces, and, at the same time, secured his post by a ready supply of ammunition, that, after a time, he was enabled to withdraw from active operations, and leave to his able and zealous coadjutor, Mr. W. D. WITTON, the pursuit of the foe, and to which latter gentleman is, in a great measure, to be attributed the present gratifying result, arising, not only from the indomitable energy, but the prudence which has influenced his every step. We are glad to find a recognition of this line of conduct on the part of the proprietors, who have determined to present to that gentleman a testimonial of the respect they feel due, and the gratitude they owe, for the services thus rendered. We recollect a similar instance in the case of the unfortunate Arigna Iron and Coal Company (another Irish job), when Messrs. ROBERT HICHENS and JOHN MOXON received, at the hands of the shareholders, two splendid pieces of plate, as a testimony of the admiration of the shareholders of the honourable and meritorious conduct they had pursued, in exposing the frauds practised in that company. It is truly pleasing thus to record instances of this nature, which are as honourable to the donors, as are they to the recipients, and more especially so, when we reflect that, in the present instance, a sum of no less than 200,000*l.* has been sacrificed.

There is one fact, to which we especially are anxious to direct the attention of our readers—viz., that the property for which this unfortunate company were to have paid the enormous sum of 165,000*l.* (though valued by Mr. MURRAY at only 20,000*l.*) was, in the course of the legal proceedings, put up for sale in the Chancery Master's Office, in Dublin, and not a single bidder appeared, although, we believe, four hundred pounds was offered bona fide for the mines, and all their appliances, after the sale, and though the company had paid to Lord AUDLEY, in hard cash, the sum of 60,000*l.* on account of the purchase money. When the company found it necessary to quit possession of the property, his lordship's representatives refused to accept possession, and the company thereupon, under legal advice, abandoned the property, and, we believe, it remains to this day without ever having attracted public attention. We trust that costly lessons, such as these, will have their full effect, as guarding against frauds; while, we doubt not, honest exertion will ever be proudly acknowledged and responded to by the shareholder.

In another column will be found a comparison of English iron with that of Belgium, and the decision of the executive of the French Government have come to, with respect to the admission of foreign iron, speaks volumes in behalf of the English iron-master. All contracts which are in future to be made at the Port of Toulon or others on the Mediterranean for iron to be used in the building of steam vessels, are to be exclusively confined to English cast-iron, as being superior to any in Europe. This acknowledgement of superiority by a rival in the useful arts, has at once put Belgium on her metal, and her government has made a representation to that of France, requesting a trial of the respective qualities of iron manufactured in England and Belgium, and suggesting, that should such trial prove favourable to the latter, that her iron may be admitted on the same terms as the former. We need not inform our scientific readers, that in regard to a comparison of the better sorts of cast iron, Belgium would not stand a shadow of a chance with England, her ores producing a metal, which, although, favourable for general purposes, is brittle, and cannot be depended on in important works where strength and toughness is required; and France is well aware of the superiority of English iron, over her own production as well as that of Belgium, and it is this knowledge which has decided the Government in admitting no other iron for the highly important uses of constructing their steam navy.

THE SALT TRADE IN FRANCE.—This important subject has for a long time attracted the attention of the leading men in France, and many petitions have been presented to the Chamber of Deputies at various periods, praying for a great reduction to be made in this Government monopoly, as being highly detrimental to commercial enterprise, by preventing a branch of industry—that of salting meat and fish—which is most material to the navy and the poorer classes of the population, from having that development which it otherwise would have, was the tax upon salt reduced. This monopoly of making salt, being entirely in the hands of the Government, is one most lucrative to the revenue; the same in Belgium, Holland, Austria, and the northern states of Europe, Spain, Portugal, Italy, and the south. For the last 25 to 30 years many attempts have been made by the influential merchants, to induce the Government to alter so oppressive a

tax on the health and prosperity of the country at large, but hitherto with out success. Since France has had possession of Algeria, a very considerable quantity of salt is exported annually to that colony by the Government, who derives an immense profit on the article, which, if in the hands of private individuals, would not only be made of a superior quality (as at present it is the most inferior of any in Europe), but would rapidly increase, and form a new branch of mineral industry. We are glad to see that the commission appointed to examine the proposition of M. Demesmay relative to the reduction of the tax upon salt, assembled in Paris on the 20th inst. They received a communication from the Minister of Finances, enclosing two reports from the Directors General of the Customs and Direct Taxes, setting forth that the result of the loss to the treasury, by the adoption of the conclusions of the report of the commission, would be from 1,120,000*l.* to 1,200,000*l.*; there was also one from M. Talbot to the General Council of Manufactures, against the second article of the project of law, imposing a tax of 10*l.* or 8*l.* 4*d.* on every cwt. of salt employed by commerce or national industry. It is stated, on good authority, that the Council of State, after numerous refusals, but on being pressed very hard by the Minister of Finance, has at last given in its adhesion to the project of an ordinance, conformably to the twelfth article of the law of the 17th June, 1840, allowing the delivery of mixed salt to the agricultural interest, at a tax of 4*s.* 2*d.* per cwt. It is to be mixed, or adulterated, with bran and the meal of oil cakes, so as to render it not suitable for culinary and other purposes. This slight concession on the part of Government—reducing by one-half its monopolising tax in favour of agricultural improvements—has given a general satisfaction to the landed proprietors, and the farmers in particular, as salt is one of the finest manures for ameliorating and enriching the soil, too frequently of a very inferior quality in many departments. This is looked upon as a first step to the reduction of this oppressive impost generally, as in France the spirit of free trade, or low duties, has been instilled into all classes by the struggle which has been so violent in Great Britain for many years, and now likely to be successful. This heavy tax on salt is the cause of an immense quantity being annually smuggled into France from this country—chiefly through Belgium—notwithstanding all the vigilance of the officers of Douanes—customs and indirect taxes—causing a considerable loss to the revenue, which, was it to be obtained at a moderate price, would be but trifling inducement to smuggling. We have felt the benefits in this country of the taking off the tax on salt in advancing our commercial intercourse with India, China, and many parts of the globe, but particularly in our curing of fish and meat for exportation to our distant colonies; and now the white salt trade is one of the most extensive resources to the mine proprietors and manufacturers of this important article in Cheshire, Worcestershire, and other counties, and is rapidly increasing as the demand for exportation is daily becoming greater; and, when its import duty into India is either taken off or reduced to a moderate *ad valorem* entry, which is expected very shortly, the consumption will become six times more extensive, if not more. The above only shows how impolitic it is for any Government to monopolise so necessary an article by vexatious duties, as not only being detrimental to the commercial and agricultural prosperity of a country, but more particularly the salubrity of its population—*nous verrons*.

PRICE OF IRON IN FRANCE.—It appears that there is a tendency to a slight reduction in the price of iron. One of the high furnaces of the Upper Marne has offered flattened iron (blasted by coal), at the rate of 15*l.* 10*s.* per ton, delivered at St. Dizier. Cast metal still retains its price at 8*l.*—600,000 lbs. were sold last week in two lots, taken at the furnaces for a foundry, at the rate of 9*l.* to 12*l.*

PROJECTED COMMUNICATION ACROSS THE Isthmus of PANAMA.—We have, in several former Numbers, given an account of the projected ship canal across the isthmus of Tehuantepec, surveyed by Signor Gaetano Moro, and conceded to Don José de Garay, by the Mexican Government. We now have the pleasure of giving to our readers a short extract from the report of M. Garella, one of the distinguished members of the *Ponts et Chaussées* in Paris, who had been deputed to study the important question of the practicability of cutting through the isthmus of Panama. This clever engineer has made a most minute survey of the tract of land between the two oceans, and made his estimates of the expenses; and in his opinion, the establishing of a railway, or a good Macadamised road, offers but very few difficulties, and that the cutting a ship canal is perfectly practicable. The slip of land which joins North and South America measures at least 1,430 miles (2,300 kilometres) in length. This immense tract of land presents various heights. At Panama itself, between that town and Chagres, there are only 40*l* miles,—from the mouth of the Caimeto, in the vicinity of Panama to the mouth of the Rio Chagres, on the Atlantic, the distance is only 36 miles—and a little more to the east, towards the Bay of San Blas, only 31*l* miles. This approach of these two great oceans is truly remarkable. After having carefully taken his levels, and well surveyed the isthmus as to its facilities and difficulties, he was convinced that it would be practicable to cut a navigable canal for vessels of 1200 tons. This canal to the Pacific ocean must be cut through the valley of the Caimeto, so as to run into the sea at the anchorage of Vaca de Monte, situated about 12 miles to the west of Panama, and towards the Atlantic ocean, by the valley of Rio Chagres, to meet on the ocean, not at the harbour of Chagres, which is inaccessible to large vessels, but at the bay of Limon, five miles distant,—thus would be insured on both sides a free and ready communication of the canal with the sea. The length of the canal would be in all 47*l* miles—of which 34 are between the Pacific ocean and the Chagres, 7*l* between Rio Chagres and the bay of Limon, and 5*l* in the bed of the Chagres. The dimensions to be as follows—depth, 23*l* feet; breadth at water level, 149*l* feet; breadth at bottom, 65*l* feet. The canals for navigating boats and barges in France, are at most from 5*l* to 6*l* feet (2 metres) deep, from 15 to 18 metres (59*l* feet) broad at water level, and at the most 39*l* feet at the bottom. The largest of the existing canals is the Caldonian, which is a ship canal, and is 20 feet deep, 122 in breadth at the water level, and 53 at the bottom. M. Garella's project is distinguished by a very bold feature To carry an ordinary canal over an elevation of 460 feet, would cause no surprise; but this is no longer the case, when it is the question of a ship canal,—and finding that the elevation would be so great to overcome, and that at a most enormous expense, what with locks, forming the summit level, and the country offering no means of giving a sufficient quantity of water, to correspond with the draught of the canal, he conceived the gigantic idea of making (what is generally done in ordinary canals) a subterraneous passage. All those who have hitherto written on the canal of the isthmus of Panama, have been dismayed by such a project—perhaps through not having deeply examined it. On an ordinary canal, a tunnel need not be more than 8 to 10 metres (33 feet) high, between the bottom of the canal and the summit of the arch, with a breadth nearly similar. On a ship canal, when the vessels would necessarily keep in their lower masts, a height of about 122 ft. would be required (nearly the height of the column of Napoleon, Place Vendôme, Paris), and a breadth of 69 ft. The idea of such an undertaking could only be contemplated by a masterly mind. This subterraneous passage will be cut through a very hard porphyry—it must be of the length of 5900 yards, and will be approached by trenches of from 45 to 50 metres (165 feet deep). It would permit the establishing of division at 328 feet under the culminating point—so that the elevation, to be surmounted by locks, would now be only 157 feet above the level of the low water mark. On the other side, on account of the difference of the tides, it would be 177 feet, and the tunnel alone would cost 1,433,900*l.* The expense of the canal with the tunnel would be, according to the calculations of M. Garella, 5,000,000*l.*, and with the interior walling of the passage, it would be 5,580,000*l.* The profits of the enterprise, after all the expenses deducted, would yield the sum of 5 per cent. on the capital employed. M. Garella, in proposing this gigantic tunnel, does not absolutely recommend it, and has carefully examined what could be done, if it were thrown aside. In this case, he is of opinion to dig a trench 275 ft. deep, and the bottom of which would be 49*l* feet above the bottom of that of the subterraneous passage, which would call for five locks more on each side, carrying the expenses to 5,960,000*l.* If it were reduced to a canal, capable only of receiving vessels of 600 tons burden, the expense would still be 3,800,000*l.* A Macadamised road would be much less. As we have before stated, the isthmus of Tehuantepec has been studied, in a very careful manner, by Signor More, an experienced engineer, on behalf of a Mexican Company,—and that of Nicaragua, in Central America, by Mr. Bailey, an officer of the British navy, who has conscientiously fulfilled his task in that laborious survey. The French Government takes a very great interest in the accomplishment of this vast undertaking, and no doubt will render every assistance for carrying it out. We have seen the various plans of the three projects, and there will certainly be great difficulties to be overcome; but what will not science and the enterprise of man accomplish, if he has sufficient means at his disposal?

THE MANUFACTURE OF IRON IN FRANCE.

In former Numbers of the *Mining Journal* we have alluded to the deficiency that generally exists throughout the entire of France for wood and fuel of every description, either for use in the manufacture of iron, building, or other purposes; but, particularly, in Algeria. M. L. C. Michel has published some rather interesting statistics on this subject, in the *Annales Forestières*. It appears, that the importation of foreign wood into France, in 1843, was of the value of nearly 2,000,000*l.*; whilst in 1844, it did not exceed 1,866,429*l.*, a decrease which may partly be accounted for by the increasing importation of coal of late years from England and Belgium. In Algeria, for some time, there has been an increased demand for wood. From the official returns, made by the Customs, it appears that, in 1841, wood, for fuel, amounted to 21,625*l.*; ditto, for building, 62,814*l.*; the grand total, in 1842, was 199,922*l.*; in 1843, it was 283,461*l.* In 1842, of the above quantity of fire wood and for building, imported into Algeria from France, was 27,549*l*. 12*s.*; from foreign countries, 172,372*l*. 8*s.* In 1843, the quantity, imported from France, was only 2,954*l*. 3*s.* 6*d.*; whilst from abroad it was the large sum of 280,506*l*. 1*s.* 6*d.* It will be seen from the above that the consumption of wood from 1841 has increased by 120,000*l.* annually, and that principally from foreign ports, although the importation may have decreased in a small proportion for France, it has materially augmented for Algeria. There has not yet been made an official return of the importations in 1844 and 1845; but, as the price of wood of every description has very much risen in the markets, the amount in 1844 cannot be estimated at less than 2,650,000*l.*, which is more than one-half of the entire value of the annual growth of wood in France, which is estimated, on an average, at 5,200,000*l.* per year. The French Government, seeing that their forests are yearly becoming more and more exhausted, is doing all it can to encourage the planting of young trees, which will henceforth become useful, either for fuel, building, or other purposes: in Algeria, the local authorities are also giving every support they can to cultivate that barren soil. The fabrication of iron and steel is making very great progress annually in France; but the serious drawback to the metallurgical industry is the scarcity of coal and lignous fuel.

The following statistical table of the consumption of mineral, or bituminous, combustible, every five years, from 1820 to 1840, and annually since, up to 1843, being the last returns:—

Yrs.	Indigenous production	Importation	Exportation	Consumption
1820	cwts. 10,936,578	cwts. 2,809,197	cwts. 264,555	cwt. 13,481,220
1825	14,913,815	5,086,187	56,149	19,943,853
1830	18,696,653	6,372,912	60,117	34,989,148
1835	25,064,166	7,921,514	212,998	32,762,162
1840	30,033,820	12,996,600	373,305	42,567,105
1841	34,101,996	11,191,954	494,609	49,798,921
1842	35,990,843	16,691,837	578,524	52,084,156
1843	36,925,896	16,626,873	617,188	52,985,052

It will be seen by the above, that, from 1820 to 1840, the consumption has risen from nearly 14,000,000 to 42,000,000 cwts., and that the increase from 1840 to 1843 is more than 10,000,000, which proves that the native produce of coal has been far from progressing in the same ratio as foreign importations, notwithstanding that the substitution of coal for wood in the manufacture of iron and cast metal has been of late years very considerable, and is progressing and increasing daily; it is still a fact, that wood enters far more than two-thirds in the category of fuel in the metallurgical furnaces, as will be seen by the following table:—

Years.	Charcoal	Coke and coal	Wood
1839	cwts. 1,795,639	cwts. 5,246,084	cwts. 291,198
1840	5,833,694	5,904,620	287,599
1841	5,976,594	6,558,839	322,105
1842	6,051,870	6,666,647	207,786
1843	6,087,034	7,357,972	724,464

The total value of which was £11,399,628.

It results from this, that the metallurgical furnaces consumed in 1843 a quantity of wood and coal, of a value of nearly 1,850,000*l.* One thing is to be said, that there is not that encouragement that ought to be extended to the proprietors of forests; and, since the rapid progress of railways and steam navigation in France, the rich capitalists are directing their attention to the purchase and working of the coal mines, as they offer very great advantages, compared with the propagation of young trees, which will be years before they can come to maturity, and the demand for fuel being so imperatively urgent, to meet the emergency that now is daily increasing for fuel from one end of France to the other.

MINES AND METALLURGY IN GERMANY.

On the Employment of Gas in Forges.—M. Goldenberg, director of the fine furnaces of Zornhoff, has published the following notice, on the process of affragement by gas:—"The employment of gas in the high furnaces for refining of iron has been decided, in a perfectly satisfactory manner, at the forges of Treverai, by MM. d'Andlauer and De Lisa. It is only, however, practicable in certain cases, and it is, consequently, necessary that they must be near a high furnace of a sufficient propelling power (either steam or hydraulic), to carry out the twisting and drawing of the iron, and it frequently happens that several circumstances oppose this combination of two establishments. Besides which, the success of this method of puddling depends greatly on the good blasting of the high furnace, on the nature of the ore that is to be worked, and the fuel employed. All these difficulties have given rise to several

Original Correspondence.

MINERAL RESOURCES OF IRELAND.—No. II.

SIR.—The counties of Cork and Kerry are, in their geological formations, chiefly composed of the old sandstone series, the upper clay slate, and the carboniferous, or coal formation. Along the southern coasts, from Youghal to Dunmanus Bay, vast strata of clay-slate, in which are many excellent veins, or beds, of roof slate, to be noticed hereafter; grey wacke, carbonated, chloritic, and talcose rocks, slaty, compact, and mixed, are seen generally in alternate order. Old red sandstone on the east and north, and limestone on the south, form the basin of the river Lee, on which "the beautiful city" is indeed beautifully situated. The upper clay slate, in which occur thick beds, or strata, of the above rocks, and small isolated beds of limestone, extends from the neighbourhood of the city of Cork west, to the extreme west of the county of Kerry, and, on the north of these counties, are found immense tracts of the coal formation, in which are rich beds of culm and anthracite coal, containing from 81 to 95 per cent. of carbon. The two first orders of rocks are numerously chequered and interlaced with mineral veins and ore lodes. The ores are chiefly copper and lead, of the sulphurated classes, but of the highest produce in metal. The lead ore produces much silver; but in some places, in branch veins of lodes, as at Ringabell, near Cork, there is a portion of iron and arsenical pyrites mixed with the ore that deteriorates its value, in rendering it more difficult and expensive in smelting and separation. The copper ore veins and lodes chiefly contain yellow, purple, and grey sulphurates of copper, passing in many places into each other. The purple and yellow seem the most constant, and form, though generally distinct in the lodes, the body of ore. The branch veins or feeders of the lodes, are also different in qualities from the ores of the main veins, and often produce good bunches of ore. Quartz as usual, but mixed with chloride or peach, is the veinstone, or matrix, of the ores. Chlorite forms a very great portion of the veins at surface, and even to some depth. Talc also prevails, but where the latter occur, the ore is found rich and in quantity.

The lodes, where the *under* or *overlying* walls assume a harder texture than usual, are mixed with compact talc and siliceous veins, which, it would appear, change the features of the lodes by having the lode stones impregnated with very fine grained ore, discoverable only by the glass or assay, or by its high specific gravity. In general, however, the metallic portions of the lodes are composed of rich stones of ore, continuous and wide. Before I proceed to describe particular localities of the mining districts of these counties, I request to explain certain geological terms used at present in classification and order, by some of our most eminent scientific writers on mineral subjects; I do this particularly, as referring to the formations of the counties now describing. In Griffith's celebrated Geological Map of Ireland, the districts now noticed are marked as formed of *old red sandstone*; and, in Dr. Kane's valuable work, *On the Industrial Resources of Ireland*, the slate rocks of these divisions are called *carboniferous*. Now, no old red sandstone of any importance is to be seen, or is discoverable, to the west of Cork, at or near surface in those counties; and I should prefer calling the slate *carboniferous* rather than carboniferous, in order to distinguish it from the shales or carboniferous slates of the coal formation.

It is true, where there is carbonic acid, as discovered in these slates, by testing with muriatic or other acids, which expel the carbonic acid by effervescence, there must be carbon; but carboniferous, to general readers, gives an idea of *coal bearing*, of which the slate of these parts, now alluded to, has no reference whatever—it being a sub-rock in geological position to the coal formation. Again, this slate, and its accompanying strata, are called *Silurian*—a term, certainly misapplied—being applicable, properly speaking, to the rocks of Wales only; although I am aware, in Mr. Murchison's valuable work, other districts are included under that title or denomination. To prevent confusion, therefore, as I shall have to make frequent reference to this rock, I shall call it, whether compact or slaty, *carbonated*, and thus distinguish it from the shales or carboniferous slates, &c., of the coal formation, leaving the higher geologists to retain their own, perhaps, more scientific, but certainly not more intelligible, nomenclature. Ringabell "Silver Lead" Mine, distant about 10 miles of Cork, is very favourably situated for working and shipment. It forms an extensive peninsula, and is about 20 fathoms in height over high water mark. An excellent adit is cut into the mine from the northern side of the peninsula. The rock is *carbonated* slate, in which veins of ore are found tolerably regular, of cubical and granular *argentiferous* lead ore, mixed, as already mentioned, in different parts of the mine, with crystallized iron and arsenical pyrites. The veins, on my examination, did not assume the character of regular lodes. They rather seem to be (what some of the professors of the present day call) *contemporaneous* veins. They are, however, tolerably constant in ore-bearing, and will, I consider, repay the company with interest for their outlay.

The indications along this line of district are all favourable for lead, and, I am confident, be found well worth examination, if attended with judicious trials. The lead mines of other parts of Ireland, which shall be noticed in order, are, generally speaking, peculiarly rich in silver, as the Clare Mines, formerly in the possession of John Taylor, Esq., but now working by the Messrs. Crookfords, and the Shallic Mines, near the "Silver mines" in Tipperary. It is remarkable, however, that where the ore is rich in silver, its quantity is diminished; and where the silver is found sparingly, which often occurs in the same lode, the lead swells, as it were, into great bunches, and is more productive, at least in quantity, if not in quality, and such, I consider, will Shallic Mine be found in working. I cannot pass remarking on the disorganized and incongruous manner of opening, &c., observed in the past workings of the mines of this neighbourhood, particularly as regards the monstrous and expensive trials made on the "Silvermines" by former companies, without any return. Surely had experienced and close-observing mining surveyors or captains of mines (scientific, of course, as all such are supposed to be), taken due patience—that is sufficient time to make their examinations—a matter, by-the-by, carelessly enough attended to, but in which a reform is much to be desired), then the workings at "Silvermines"—at Shallic, a certainly most promising mine—and at other mines unwisely left idle, would, doubtless, be now making returns. But I am digressing; and as this letter has extended sufficiently for this number, I must refer to my next, when I propose treating on particular localities in Cork and Kerry, where copper lodes of high promise have been discovered, and from which, ores yielding a considerable produce, beyond the aggregate of those generally found, have been extracted. It is to the productiveness of these lodes in quality, where proved, that I would more especially direct attention, as evidence of the apathy, or disregard of the mineral treasures which these two counties alone present, sufficient in themselves to hold out inducement to the English capitalist.—ST. PIERRE FOLEY: London, March 5.

WALL'S IMPROVEMENTS IN METALLURGY.

SIR.—The article, signed "An Iron Smelter," in your last week's Number, on "Wall's Improvements in Metallurgy," although not glaringly unscientific, seems to betray a wish to rekindle the ill-smothered embers of some former pique, or it may be intended as a test of the sagacity of Mr. Wall, by tempting him to an explanation, which would preclude the necessity of any application for licenses. Although personally interested in whatever tends to improve the condition of our iron trade, yet perfectly indifferent as to the quarter whence the amelioration may arise, I must say, that after a careful perusal of the treatise, it does not merit the strictures passed upon it, by your correspondent. It merely professes to give a detail of experiments in proof of the claims of the process, as patented by Mr. Wall. Facts are simply stated, with their corresponding dates. There is no straining at effect, nor catering for importance, nor any appearance of a wish to exaggerate. The testimonies of several individuals are adduced, "of course, in favour of the electrified iron;" but, on a review of the character of these witnesses, together with the opportunities which they had of forming a correct opinion on the subject, I cannot but think that the insinuation of "An Iron Smelter" falls pointless to the ground. I think also, that, on a more careful search, he will discover some traces illustrative of the *rationale* of electrical agency, when set in operation on ferruginous compounds. As to the new battery, constructed by Mr. Wall, respecting which your correspondent complains, that the Treatise is not sufficiently explicit, I have just seen the model, which is being lithographed, preparatory to its being prefixed to a second edition. Nothing can be more simple in principle, or less complex in construction, and once arranged, according to the directions to be given with the drawing, there will be no need of "the presence of a scientific man," nor ground of apprehension "in leaving it in the hands of the usual attendants on an iron work," as only the most gross negligence or determined malice, can obstruct its "elaboration," or hinder it from producing effects, which, I think, will prove it to be something more than a "beautiful philosophical toy," or "impracticable novelty."—AN IRONMASTER: Wolverhampton, March 5.

X IMPROVED CUPOLA FOR MELTING IRON.

SIR.—In a recent Number of your paper was given an account of an improvement in cupolas for melting iron, claimed by Messrs. Franklin, Townshend, and Co., of Albany, New York. Now, I think if there are any merits due for that improvement they ought to be given to this country, as we have had a cupola working on the same principle as the one described in your paper for nearly two years, and can bear testimony that there is a great saving in the use of it. The English public are generally suspicious of anything coming from brother Jonathan. Any person feeling desirous of inspecting the cupola at work may do so by applying to me—with the exception of its being worked with cold instead of hot-blast.

Oyley Foundry, Feb. 28.

EDWIN ROSE.

X STATISTICS OF THE BLACK LEAD TRADE.

SIR.—You would confer a favour by entering, at your convenience, into the statistics of the *black lead* trade—giving from whence the supply is obtained, in what quantity, and what prices; and any information regarding the Borrowdale Mine, in Cumberland—what is the present annual supply and price obtained, and if any ores of foreign produce equal it in quality, or if any method has been discovered, which, by mixing the pure black lead in *fine powder* with gummy matter, the mixture produced is equal to the pure *native solid* black lead in value—say, for artist's pencils? An early inquiry into the subject will oblige—PLUMBAGO: Swansea, Feb. 26.

[We have before had our attention directed to the desirability of collecting the information alluded to by our correspondent. Beyond the general particulars already given in our columns, we believe nothing is publicly known—the trade being confined to very few hands, and the system pursued by them entirely precluding others than those immediately interested from fairly obtaining the least knowledge of what transpires.—"Plumbago," or any other correspondent, would be conferring a great favour, by furnishing us with such information as they possess.]

X GENERATION OF SULPHURETTED HYDROGEN GAS.

SIR.—Observing in the *Times*, of this day, the report of an inquest at Greenwich, and that the jury found that the men met their deaths "by suffocation, from the effects of sulphuretted hydrogen gas, which had escaped from one still to another still, I should feel much obliged by any of your correspondents informing me, by what process the sulphuretted hydrogen gas was generated in this case, the works being for the manufacture of sulphuric acid.—A SUBSCRIBER: London, February 4.

X PILBROW'S ATMOSPHERIC RAILWAY.

SIR.—I noticed in your Journal of last week a note, containing some inquiries respecting "Pilbrow's Atmospheric Railway," and, in it, an allusion is made to the model exhibited at this establishment; the writer states that he was informed here, "that the model was so dangerous in its action, that we dared not exhibit it." I beg to assure you, that the information was given without the least authority, and is perfectly incorrect; the working of the model was not suspended on account of any apprehended danger; but for the purpose of furnishing it with a set of new pinions, or cog wheels, and that as soon as these are completed, it will again be set to work. I have felt it necessary to make this statement, as the note, which appeared last week, is calculated to severely injure the invention, upon erroneous grounds.

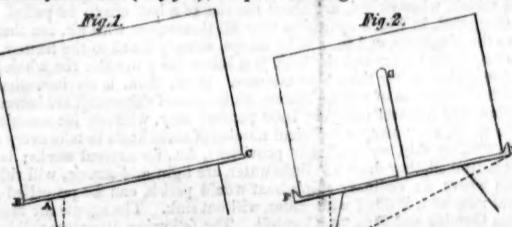
T. W. KEATES.

Adelaide Gallery, March 5.

X GREENHOW'S GEOMETRICAL RAILWAY.

SIR.—In the *Mining Journal* of last week appeared a letter from Mr. Martin, setting forth his reasons for objecting to the suspension of railway carriages, as proposed by me. I must, therefore, again trespass on your patience, by troubling you with some remarks in reply, and to make the matter more clear, I will take the subjects in Mr. Martin's letter, and reply to them in the same order as they occur. In the first place, as to the thanks I gave him at the end of the evening, he has allowed a vivid imagination to give a bright colouring to a very slight incident; I did certainly thank him for the gentlemanly way in which he had put his questions, also for the considerate manner in which he withdrew from the contest, when he saw the commencement of the confusion he describes; but where the rest of the colouring comes from he knows best. Next, in reply to the *truism* he favours us with, about a body not overturning itself, "unless the vertical line from the centre of gravity falls without the base," I will only ask Mr. Martin to read what I have said on the subject, and make himself acquainted with the principles I laid down, and I think he will find that I have said nothing contrary to the above proposition; but I have made such arrangements, as to make it *more difficult* for an impetus given by an obstruction on the rail, or other cause, to throw the vertical line he talks of, *without* the rail, or base, on which the carriage rests. It is not to resist a steady and continual power; but an impulse acting at intervals, with more or less effect, according to the magnitude of the obstruction, and which, once resisted, ceases to operate. Had Mr. Martin made himself acquainted with the whole of the arrangements contemplated in the geometrical railway, he would have been satisfied that I had succeeded in making it *more difficult* to throw the centre of gravity beyond the perpendicular of the base.

In the present system, on any contingency occurring to raise up one side of the carriage, the proper relation between the wheel and the rail is at once destroyed, the axis of the lower, or supporting wheel, becomes the fulcrum across which the axle acts as a lever, the weight of the carriage, resting upon the opposite end, tending to press it down, and to resist any attempt to turn over, with a force proportioned to the length of the lever, and the amount of weight within the line perpendicular to the rail's centre. Now, the supporting spoke, or fulcrum, being *originally* perpendicular to the point on which it rests, and secured to the lever in such a manner, that as the one elevates, the other departs from the perpendicular in a precisely similar ratio, thus, being thrown beyond the perpendicular, it diminishes the power of resistance to the centre of gravity, because the fulcrum has itself a tendency to recede (see fig. 1); the point A being the fulcrum across which



the lever B, C, acts. On the elevation of the end C the fulcrum A departs from the perpendicular in a similar degree to the elevation, diminishing the power of resistance to the impulse imparted to the body: at the same time great part of the weight is pressing on the point B, considerably beyond the perpendicular of the point supporting the fulcrum, much reducing the effect of the counteracting leverage. By the arrangement in the *geometrical* railway, a very different effect is produced, from the perfect adaptation between the wheel and the rail, under all circumstances they are rightly adjusted to each other, and the spoke of the wheel having an inclination of 22½ degrees within the perpendicular of the rail on which it rests (see fig. 2), it follows that the axle and wheel form together one *cent* lever, acting with the rail as a fulcrum, the true length of which is an imaginary line drawn from D to E, which being considerably longer than that in fig. 1, from A to C, the like weight on the end of it will, consequently, have more power in keeping the lever down; and the fulcrum, on which it acts, being fixed, will not recede and diminish its power. At the same time, by the suspension of the carriage between the points G and E, the weight is not thrown at F *without* the line perpendicular to the fulcrum; whilst on a diversion of the centrifugal force giving an impulse to cause elevation at E, the weight thrown by the restraint on the pendulum at that point must be *so much* removed from G, and, consequently, the centre of gravity lowered in a ratio equal to that removal of weight. I think what I have said will convince Mr. Martin, that if "the whole matter lies in a nutshell," he is not of sufficient calibre to crack the nut. He next talks of the centres of suspension having a centrifugal force of their own—what he means by this I must confess myself perfectly "innocent" of. Next, I must state, that, in using the word "tyro," I did not include him in the category; but I think he will allow that I was justified in applying it, when I relate what took place. After the meeting broke up, one of the gentlemen came to enlighten me on the subject of centrifugal force: by way of illustration, he had a piece of wood fastened to a string, which he threw round with considerable velocity, saying triumphantly, "that is centrifugal force?" I merely replied—"No, it is not; but if you let go

your hold on the string, and allow it to fly in the face of your friend, you will have a practical exposition of the principle." I need not say that I heard no more of him. Next, Mr. Martin will remember, that one gentleman during the discussion stated, that cannon was enabled to resist the expansion necessary to eject the ball, because it was an arch; evidently ignorant of the fact, that the power of resistance in an arch is due to compression, not expansion. I fear, if this gentleman can throw no more light on other subjects, those who attempt to *steer* in his course, will find themselves *signally* disappointed in their expectations. I trust I have said sufficient to satisfy Mr. Martin on all the points at issue, so will conclude, by subscribing myself, your obedient servant, C. H. GREENHOW.

Cecil-street, Strand, March 5.

SOUTH-EASTERN RAILWAY.

SIR.—Having examined the Bill for the branch railway from Tonbridge-wells to St. Leonards-on-Sea, in length about 25 miles, I take advantage of your columns to caution the shareholders against the intended sacrifice of their capital. The South-Eastern Company take powers in the Bill to raise 850,000*l.*, and this does not include the amount provided for a tunnel to connect the line with a station at Hastings; the total cost will, therefore, be at least 1,000,000*l.* Now, I will undertake to prove that double the length of line made direct to the Hastings terminus will not cost so much if made by the Direct London and Hastings Company. Under such circumstances, shareholders must be exceedingly good-natured who will part with their money for shares in the South-Eastern Company, when by investing in another Company for the same purpose, they can not only get the same value at half the cost, but avoid a division of profits with holders of the old stock of 5,000,000*l.* or 6,000,000*l.* for the cross-country lines. I have no doubt this is a fair example of the rest of the Bills of the South-Eastern Company, as they are pledged to waste and extravagance in every department. There is no part of England where heavy works are executed at less cost than in the Rape of Hastings, or where it is more imprudent to employ engineers from the North; and as a proof of this fact, it is not long since, in a case before a Committee of the House of Lords, an engineer of high repute (Sir John Macneill) estimated some road works near Hastings at 11,000*l.*, which I subsequently superintended, as one of the trustees, and they were executed by local contractors for about 2,000*l.* Without intending the slightest personal disrespect to railway engineers from the north, it is perfectly absurd to employ them in the south on such common-sense matters as railway works; and the impropriety of employing any but local contractors is amply proved by the manner in which the works connected with the Brighton Railway Company have been conducted to the present time.—J. TROUP: Hastings, Feb. 25.

DIRECT LONDON AND EXETER RAILWAY.

In our report of the meeting of the shareholders in this company, in last week's Journal, and our remarks thereon, we alluded to an explanatory letter, addressed to Sir Bruce Chichester, a copy of which we received from Mr. Colombe, but too late for notice; that document is necessarily very lengthy, and instead of inserting the same entire, we think it better for the writer's cause, and more satisfactory to our readers, to give it in a condensed shape, retaining all the points of importance. Mr. Colombe commences by stating that the resolutions passed at the meeting of the 23d ult., leave the questions between himself and the committee wholly untouched, notwithstanding the recrimination which there took place; he then goes back to the meeting of the 15th of December last, at which the accounts there produced, showed a balance of only 492*l.*, which, in answer to a question from a proprietor, Sir Bruce Chichester distinctly stated was correct; in these accounts 812*l.* 10*s.*—part of the preliminary expenses, charged as paid to Mr. Colombe—that gentleman declares he never received; and he states that the day after that meeting, Sir Bruce acknowledged to him that he had while present, 10,000*l.* in Exchequer Bills in his pocket. The committee had explicit notice of the charges brought against them by Mr. Colombe, which he reduces under the four following heads:—1. The non-receipt by him of 812*l.* 10*s.*, charged by them in the accounts. 2. The unexplained and suppressed fact of 1506*l.* 11*s.* 3*d.* being paid out of the 4000*l.* alleged to be for stock-jobbing purposes. 3. The irregularity (to use the most courtly phrase) of the Parliamentary deeds; and 4. The non-registration of two of the most active of the committee. The letter proceeds to substantiate these charges; and challenges a calm, careful and deliberate, investigation as to facts. With respect to the charge made by Dr. Phillimore, as to ante-dating one or two orders for advertisements; the writer thus explains:—Since January the collector of two railway publications called upon him with accounts for 28*l.* and 19*l.* 19*s.* and stated that he had applied to the committee, and if he would sign the order they would pay it, but he declares that he positively declined to do so; but for the sake of doing justice to the publishers, he gave the following certificate at the foot of the accounts—"I certify that an order was given by me previous to the insertion of the above advertisement, and which he signed and dated correctly—and as to allowances made for advertisements, he declares that he never received, or was promised, a single shilling from the 2656*l.* 2*s.* 7*d.*, stated to have been paid for advertising, nor had he the slightest interest in any of the engineering expenses. Having thus disposed of these charges, he puts some queries to Sir Bruce, as to the honour of the committee in their various proceedings, whether it was consistent with honour to approve of deeds, back dated, in order to deceive the shareholders? to hold a cheque for another for 812*l.* 10*s.*, approved of at a meeting of subscribers, and for which a resolution had passed the board, though never entered on the minutes? to take the produce of a man's labour for months from his hands, evade the payment of the sum held for him, treat him with undeserved suspicion, till at length he must have been obsequious and patient indeed, to have continued any longer associated with such a committee? and whether it was consistent with honour to produce false accounts to the shareholders, and to suppress the fact of a payment and loss incurred by the committee's own *acts*, while a former finance committee is gravely charged with having purchased 1075 share, for which Sir Bruce afterwards consented to pay, because, as he stated at the meeting, Sir Henry Pym came to him with "tears in his eyes," and because he was "beseit for several days?" A statement having issued that Mr. Colombe was not the projector of the line, he observes that projector and promoter are synonymous; that the party who exerts himself for the success of the company has the best, and only substantial claim; and that he always wished others aiding in the slightest degree to be rewarded according to their merits and deserts. Mr. Colombe then, having gone through the second account produced by the committee at the meeting of the 23d of February, subjoins a declaration, made before Mr. Hardwick, the magistrate at Marlborough-street, in which he states, that on the 16th of December last, Sir Bruce Chichester positively stated that the bankers' account at Messrs. Curries had been closed, and that he had caused all the money to be withdrawn sometime previous to the meeting, for fear of creditors attaching the funds, and that at the meeting on the previous day he actually had in his pocket 10,000*l.* worth of Exchequer Bills—that two days afterwards he applied to him on the subject of the 812*l.*, and he then stated that he thought he could not pay him until a sum expected was received from Scotland, thus, leading him to expect a mere temporary delay, and not that any objection existed to carry out the arrangement made, of paying him 812*l.* 10*s.* in money, and 1000 shares, neither of which, or any part thereof, has he ever received up to the time of making the declaration. As to the charges brought against him at the meeting, of his being connected with Lord Huntingtower, and being solicitor to the Air Machine Company, Mr. Colombe declares he never saw or had any transactions with his lordship; and as to the latter charge, the company was never formed, nor did the public subscribe a single shilling to the speculation; he advanced money to the parties to secure the patents, for which he has never been repaid—and some of the experiments are still progressing. We have, we believe, now taken every point in Mr. Colombe's letter, to which it is necessary to advert, to enable that gentleman to set himself right with the public, which we think has been done satisfactorily, and in this condensed form, will draw more attention than in the very lengthy state to which he has carried the letter itself.

MACHINERY FOR EGYPT.—M. Cavé, who contracted for the building of the *Chaptal* iron steamer, with all her machinery complete, which will leave Paris about the 15th of this month, is now busily engaged at Rosas, in shipping off to Alexandria, in Egypt, the different materials to complete the large dredging machine, for which he has contracted with the Pasha, Mohamed-Ali, for the purpose of dredging the Nile, so as to render it perfectly navigable. This is only a preliminary step towards the cutting of a navigable ship canal across the Isthmus of Suez, to join the Red Sea with the Mediterranean—one of the grand projects of the Emperor Napoleon.

GREENHOW'S GEOMETRICAL RAILWAY.

[The following paper was read at the Philosophical Society, Newcastle, on Tuesday last, March 8, by Mr. T. M. GREENHOW.]

No subject absorbs so large a share of public attention as railways, nor is there any which so largely affects the public interest, safety, and comfort. The facilities which they offer for commercial and social inter-communication have converted the whole world into travellers; and have added greatly to the enjoyments and conveniences of human life; nor can the consequent enlargement of the field of thought, from the more extended intercourses of society, and the variety of new objects presented to the senses, be easily over-estimated. But, surprising as has been the growth of the railway system, especially in this country—and marvellous as is the rapidity with which we are enabled to transplant ourselves to the most distant parts of the kingdom—the numerous accidents which continually give rise to inconvenient delays, to serious personal injury, or to the destruction of life, cannot fail to convince us that something is yet required to bring it to that state of perfection, of which we can scarcely doubt it to be capable. Every reasonable attempt, therefore, to introduce greater precision into the mechanical or other arrangements, surely deserves the careful and candid consideration of engineers and others concerned in the management of railways, not less than the serious attention and encouragement of the public generally, for whose welfare such attempt has been made. It is from these considerations that I am induced to claim the attention of this society to what has been denominated the "geometrical railway"—a term which I believe to be strictly appropriate, since the arrangements throughout are based upon geometrical calculations, and appear to me to involve mechanical principles of great importance in works of such vast magnitude and grandeur.

That a determinate figure is most appropriate for everything in nature and art, is a position which may be proved directly and indirectly, by reasoning on the immediate effects of specific forms in their action and reaction on each other, and by the analogy of existing mechanical operations of the most perfect and successful character. In mechanics this position is as essential as the atomic theory is to modern chemistry; and definite forms are not less necessary for perfect mechanical arrangements, than definite proportions are to perfect chemical combinations. But let us bring forward a few illustrations. Why are the planets round? and why do they maintain perfect order and regularity in their movements, and relative distances from each other? Is it not by a strict observance of the laws which nature has imposed upon matter? and because a round figure is necessary for a perfect balance of the several forces by which they are acted upon? Alter their figure, and you immediately destroy this beautiful balance of forces; because the prominent points of an angular body, or the unequal proximity of an oblong, would alter the uniform operation of that attraction and repulsion on which their regular movements and unvarying distances are dependent. This observation may be applied with equal truth to the more perfect works of man. In the construction of the steam-engine, for example, why is the cylinder round, but because the relations between it and the piston are manifestly more certainly and accurately maintained than could have happened with any other figure? But the most apposite instance, perhaps, is afforded by the wheel. A wheel is a succession of levers, acting between the axis and the circumference, which, in its revolution, succeed each other in regular order, and the perfection of its action depends upon the uniform length of these levers—depart in the slightest degree from a perfect round, and how obviously ill does the whole perform its duty, halting and hitching as it goes along, and continually threatening to break down with, or overturn, the weight which it supports! Such were the first attempts at wheel making. The axis was but an imperfect round, the not a precise circle, but varying at different points in distance from the axis. The roads, too, on which such wheels revolved were rough and uneven, and adapted very rudely to the action of the wheels. But wheels were gradually brought to a greater degree of mechanical perfection; and for the roads, Mr. McAdam at length did something, and railways have done much more: yet, still, the frequent and often fatal accidents which occur upon these, prove that perfect on in this respect has, by no means, been attained; and when we revert to original principles, we are enabled to detect many glaring defects. If we would remedy these defects, we must imitate the more perfect operations of nature in the figure and balance of forces dependent thereon, which secure the safe and regular movements of the planetary system; and the degree of precision which has been introduced by man into the more perfect of his mechanical arrangements, as in the steam engine, the time piece, and the various modifications of the pulley.

Holding these fundamental principles in view, a definite form has been given, in the geometrical railway to the rails greater precision to the adaptation of the wheel, and arrangements adopted to secure such a balance of the forces of attraction and repulsion, as to prevent the engine and carriages from being forced off the line, under many incidental circumstances, which are so frequently the causes of the most destructive casualties on railways.

But though I may have succeeded in proving that a definite form is essential to all the parts of a well-constructed machine, which cannot be departed from without detracting, more or less, from the perfect performance of its operations, it remains to be inquired into, what is the appropriate form for any particular piece of mechanism? A railway, for instance, which, with its engines, carriages, and rails, can only be looked upon as one great and connected machine. To answer this inquiry properly, we must consider what are the movements expected to take place between the different parts, either by design, or by accidental circumstances which cannot be avoided,—and what are the altered relations occasioned by these movements? To enable us to answer these questions correctly, it may be laid down as an axiom, that a round is the only form which admits of a variety of motions between different objects, when made to move upon each other:—for example, a solid square may move along a groove of the same shape, horizontally, and so of an oval, or octagon; but alter their relative positions, and the mechanical adaptation ceases. But apply this principle to railways. It may be very true that the more general movement of the moveable on the fixed parts of these great machines, is horizontal, nevertheless both by design and accident other movements not unfrequently require to be performed, and for these the shape of the rail, and the adaptation of the carriage-wheels, are equally unfit. This has been long felt by engineers, and great and frequent changes have, in consequence, been made in the shape of the rail and the tyer of the wheel; still the object has been very imperfectly attained, of so adapting the one to the other as to admit of sharp curves or accidental impediments being encountered, or rapid speed attained, with safety, or the avoidance of that constant oscillation from rail to rail which is so annoying to the traveller, while it is constantly deranging, in an increasing degree, the parallelism, and loosening the connections of the rails. We must conclude then, that the definite form appropriate to the rails, has not yet been attained; and since the necessary movements which take place between them and the carriage-wheels are accidentally or designedly various, frequently altering the relations between the one and the other, the true definite figure of the rails must of necessity be round or cylindrical. Arriving at this conclusion, we are naturally led onward to the other mechanical arrangements which have been adopted in the geometrical railway,—the proper adaptation of the tyer, the obliquity of the spokes, and the peculiar method of suspending the engine and carriages. [To be continued.]

RIVETING BOILERS BY STEAM.—We last week briefly referred to an invention, recently completed, for the purpose of riveting boilers by steam. The machine, which has been placed on the works of Messrs. Garforth, of Duckinfield, is about five feet long by four broad, and constructed upon the most simple plan: there are no wheels or cranks, the whole appearing to be merely a round piece of iron with a small shaft projecting from the centre, at the end of which is placed the die that forms the head of the rivet on the outside of the boiler. There is a strong iron post a few inches from the shaft, in the front of which, and opposite to the end of the shaft, is the die which clenches the rivet in the interior of the boiler: between this post and the shaft, the iron plates are placed, suspended by blocks fixed at the head of a strong wooden frame of considerable height, by which they are hoisted and lowered by one man at pleasure. The principle upon which the machine is worked is similar to that of the piston used in a common engine, the steam being brought from the boiler to the machine by means of three-inch pipes laid under ground. The riveting may be said to be accomplished more by a push than a blow, and to effect this a boy stands at the side of the machine, and by means of a lever, opens and shuts the valve which gives a propelling power to the shaft equal to 20 tons weight, and this too with comparatively little steam. Seven rivets per minute can be thus secured with ease; while the very disagreeable sound made by the present system of hammering (in some neighbourhoods a most intolerable nuisance) is entirely avoided, the noise caused by this machine not being heard beyond a few paces. Many scientific men have inspected the machine, and expressed their satisfaction with its power and construction. —*Liverpool European Times.*

CRAMPTON'S PATENT LOCOMOTIVE ENGINE.

At the Society of Arts, on Wednesday, Mr. Crampton made a further statement respecting large wheels, conceiving it necessary to do so, as the explanation given by him previously, was not sufficient, in his opinion, although correct—yet without all the circumstances were known, it might lead to the conclusion that engines, with small driving-wheels, took less power than large ones to take the same load a given distance. The question put to Mr. Crampton was to this effect—"How is it that you propose large wheels, when it has been found in practice that they will not answer, instancing the Great Western?" The answer being, that the engines, with 10 ft. wheels, on the Great Western Railway, had not sufficient power to drive them. Mr. Crampton, in explanation, gave the annexed list of locomotives, containing every essential particular, and showed most clearly to the meeting that the large 10 ft. wheels were abandoned for want of power, and the 7 ft. ones preferred—that is, the 10 ft. wheeled engines had 474 ft. of heating surface, while the 7 ft. wheels had 724 ft.—being 250 ft. more surface, as the latter engines took heavy loads at high speed (which could not be expected of the former). The company, in consequence, had designs made, and ordered several of the same power—viz. 7 ft. engines, with 700 ft. of heating surface, and 6 ft. engines, with 600 ft. of surface, it was found, after three or months' work, that the 7 ft. engines had more power than the 6 ft. ones, and did the work, the result of which, determined the future orders to be 7 ft. wheels, with 700 ft. of surface: we see, therefore, that the size of the wheels had but little to do with the power, as, in one instance, the large wheels were given up for want of power, and in the other case the smaller ones were abandoned for the same reason.

Proportions of Locomotives Engines used on the Great Western Railway at its opening:

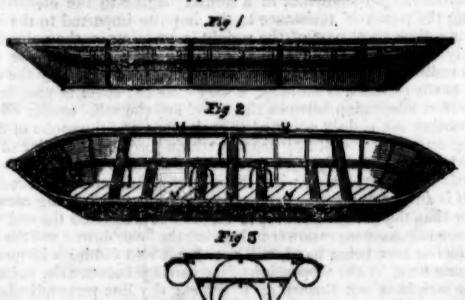
Name of engine.	Area of firegrate.	Total Heating surface.	Diameter of Driving wheels.	Diameter of Cylinders.	Length of stroke.	Surface in firebox.	Cubic contents of both cylinders.	Proportion of cylinder capacities to the wheel.
Ajax	Feet.	Feet.	Feet.	In.	Feet.	Feet.	Feet.	
Vulcan	10.22	474.0	10.0	14	20	57.3	7.09	1 : 1.41*
North Star	9.58	569.0	8.0	14	16	55.0	6.15	1 : 1.3 *
Morning Star	13.9	724.0	7.0	16	16	70.10	7.42	1 : 0.94*
Fire Fly	13.37	700.0	7.0	15	18	88.75	7.36	1 : 0.86*
Fury	12.50	608.0	6.0	14	18	79.0	6.40	1 : 0.96†

* The first engines used on the Great Western Railway.

† Engines ordered by the company.

Mr. Crampton proceeded to explain, that as large wheels were advocated by him, and as the smaller ones were equally good, as regards power, provided the surfaces in the boilers were the same, and the cylinders were relatively proportioned, it was necessary to show in what their superiority consisted: he stated two reasons:—First, the parts of the machinery travelling at high velocities, caused considerable wear and tear, which large wheels reduced; and, secondly, the only tendency to oscillation, caused by the working of the engine itself, was reduced as the square of the velocities, i.e., to overcome the momentum of the unbalanced portions of the machinery—viz., the piston, piston rod, and connecting rod, which acted alternately, causing considerable side motion at high velocities—this action could only be ameliorated by the use of large wheels, unless some perfect and simple system of balancing the parts is discovered. It was remarked at the meeting, that Mr. Crampton's locomotive, and Dr. Ritterband's proposition for destroying deposit in boilers, which came on together, were, without doubt, the greatest improvements made for many years,—in which opinion we certainly concur, and we never recollect inventions having been brought forward and discussed, that met with more decided approval of scientific and practical men than these did. We believe Mr. Crampton's plan, for reducing the centre of gravity, and confining the weight between the axles, is the only attempt that has been made to do so on locomotives.

MONZANI'S PORTABLE LIFE-BOATS.—It has long been matter of complaint and regret that means have not been adopted for providing all large vessels, whether emigrant ships or those of the Royal Navy, with sufficient means of preserving the lives of the crew and passengers in case of fire or shipwreck; but it is not remembered that where perhaps there are from 500 to 1000 persons on board, it would be morally impossible to provide sufficient boats on deck, or any other part of the vessel, for them. To obviate this difficulty is the object of the present invention, and which, certainly, is well calculated to provide the much desired remedy. These boats are so constructed that they may be piled up on deck, and eight, when stowed, only occupy the space of one ordinary ship's boat. The construction is as follows:—the gunwale is formed by a light, but strong, frame, to which is attached the seats or thwarts, forming the entire upper surface of the boat; between that and the bottom is another similar frame of smaller dimensions, braced together by the stretchers; and the bottom, which is flat, is composed of three layers of planking, one lateral, another transverse, and the third diagonal—the whole copper-fastened and strongly riveted together; the covering of the boat consists of a strong and thoroughly waterproof kind of tarred canvas, and thus, when not in use, the lower frame fits round the bottom, and the upper frame is just large enough to fit outside the lower, and the whole becomes a flat surface, the covering being sufficiently pliable to allow the raising and lowering of the frames with the greatest facility. When required for use, all that is necessary is for a man at each end to lift the gunwale to its extent, raise the two largest iron arched supports at the two end thwarts, and the other supports to each seat and stretcher, as quick as possible. Two air cases which are kept to each boat, and which, when closed, are about the size of a hat, are to be pulled out or elongated, in which operation they fill themselves with air, are then to have the plugs screwed in, and by straps already fixed to the frames, are securely lashed all round the boat just below the gunwale: the whole can be completed in less than four minutes. Here, then, is an invention by which the chances of saving human life in cases of shipwreck are increased tenfold, and a vessel carrying 1000 persons may, without inconvenience as to space, stow away a sufficient number of these boats to take every soul off a sinking ship, and sufficient provisions, &c., for several weeks; being flat bottomed, they draw but little water, are light and strong, will ride at a sea where an ordinary ship's boat would perish, and can be propelled at a rapid rate, and, if filled with water, will not sink. The agents are Messrs. John Gamble and Son, 78, Cornhill. The following diagrams will better show the construction:—Fig. 1 is longitudinal view, showing the air cases attached: fig. 2, a perspective of the boat when raised: and fig. 3, a transverse section of the rails, iron supports, and air cases:—

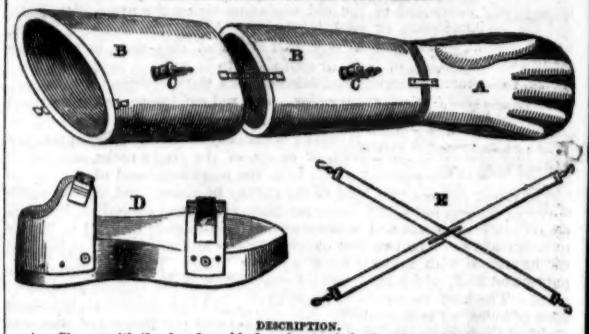


NEW STEAM-SHIP PROPELLER.—A new invention, patented by Mr. S. R. Parkhurst, for propelling steamers, has just made its appearance, a model of which has been perfected and exhibited to the Lords of the Admiralty, to the principal steam-boat companies in London and Liverpool, and to numerous scientific gentlemen conversant with steam navigation, from all of whom the most favourable and flattering opinion has been expressed of its practicability. It possesses great advantages over every thing now in use—amongst which it is stated that, by the application of these propellers, it will not require the immense weight of engines and fixtures now used. The steam-power may be applied with two or three small engines of from 30 to 40-horse power each, lying between decks or over the boilers; consequently, there would be a corresponding reduction in the consumption and cost of coal; and the space which the large engines now occupy could be appropriated for freight or passage berths. This invention supersedes entirely the paddle-box, with its immense shaft and wheel, and will effect a great increase of speed.—*Liverpool European Times.*

ROYAL LIFE-PRESERVING AND SWIMMING APPARATUS.

[Registered pursuant to Act, 6 and 7 Vic., cap. 65, and by Royal Letters Patent.]

THE INVENTION OF MR. JOHN KEYSE.



DESCRIPTION.

A.—Gloves, with the hands webbed and extended; thereby producing considerable power and buoyancy, exceeding vastly the propelling power of each natural hand in the ordinary method of swimming, giving entire freedom to the fingers, dispensing with the constriction of the hand, and relieving the individual from the effects of cramp, which is often produced through such causes.

B.—Air-tight conical armlets, connected to the gloves, and which are detached into three parts, very simply connected; thereby leaving the elbows and wrists joints to entire freedom of action when applied to use, by being drawn on, when required to discharge the inflation, in cases of drowning to preserve or secure the body. On rising to the surface, a mere inflation will enable the diver to support the body, and the power of the apparatus to bring it ashore; thereby dispelling with the difficulties attending life-boats.

C.—Self-acting valves, for inflating the armlets. The ends to be placed between the lips, the nipple against the teeth, and forced back, opening the valve and blowing the air in at the same time. The nipple to be pressed down, when required to discharge the inflation, in cases of drowning to preserve or secure the body. On rising to the surface, a mere inflation will enable the diver to support the body, and the power of the apparatus to bring it ashore. The inflation can be increased for providing additional buoyancy when required.

D.—Cork clings, secured by elastic straps and buckles, concave at bottom, possessing the powerful advantages of propulsion, and giving to the wearer the apparatus effect of pressing himself forward, as if forcing or projecting himself from some fixed substance. It, likewise, possesses the advantage of making considerable progress in swimming water, thereby occasionally relieving the arms from the effects of long exertion. They are also of vast benefit in cases where persons are length of time immersed in water by preserving the legs from depressing. The invaluably valuable part of this portion of the apparatus is clearly demonstrated—for instance, from the pressing down of a reversed vessel, such as a glass—immersed in water.

E.—Cross straps, passing over the back and shoulders, and fastened to the two rings of the upper armlets, for preserving the position when the inflation is sufficiently charged, and permitting the diver or wearer to dive with facility.

Note.—The admirable principle and effect of this apparatus, are exemplified by the swimming powers of the frog, swan, duck, &c.—the body being entirely free, and possessing all its momentum or power, by the action of the extremities.

TO THE EDITOR OF THE MINING JOURNAL.

SIR.—In relation to the above invention, I beg to say that it has been tested in the River Thames, private baths, and, more particularly (as that is a greater proof of its practicability and efficiency in cases of danger), in the open sea—in all of which cases I am happy to say the experiments were crowned with the most complete and admirable success. It will be found on inspection and trial to possess power and qualities which no other apparatus for the purpose at present does, by giving buoyancy and momentum to the extremities, and so preserving the central weight of gravity, thus enabling persons to swim against tide and cross-currents, neither can any one be drowned whilst wearing the apparatus; it also dispenses with the necessity of teaching the art of swimming, by giving to the wearer the confidence and power to swim, and to save himself and others in case of danger. Its value to bathers, by dispensing with the life-boat, is incalculable; and in cases of wreck on sea-shores, its operation would be found most successful for the preservation of human life; and, in this instance, I may allude to the late melancholy occurrence of the loss of the *Castor*, emigrant ship, off King's Island, Bass's Straits, when upwards of 400 persons perished, merely for the want of some efficient means on board or a shore, of conveying a rope to the sufferers. This is one only of the numerous instances that have lately occurred where life might have been saved by my apparatus. In cases also of persons falling overboard from any of her Majesty's vessels of war, or of merchants' ships, it would be found to answer perfectly, and where the life-buoy has often proved a failure. Looking at the valuable qualities possessed by the above simple contrivance, with no difficulty in applying or wearing it, capable of being put on or taken off in one minute, I hope, by the means of your scientific and talented Journal, to draw the attention of all persons of humanity and Christian feelings to the necessity of giving public countenance and support to my invention; but bearing in mind the inefficiency of all the present means adopted for saving life (in comparison with this apparatus), and also the daily and awful cases of loss of life from shipwreck and other causes, at which the heart recoils to mention, I myself have no fear of the public patronage in support of the cause of suffering humanity. London, Feb. 26.

I am, Sir, your's, &c., JOHN KEYSE.

PATENT STEAM HAMMER.—A very interesting experimental trial of Mr. James Nasmyth's patent steam hammer of 50 cwt., took place at H.M. dockyard at Chatham, where it has been recently erected. The trial commenced with breaking up old and condemned anchors, under the superintendence of the patentee, and in the presence of Captain W. H. Sheriff, superintendent of the yard, and several ladies and gentlemen who had been especially invited to witness the immense power and perfect control under which the hammer is placed by the inventor's beautifully constructed machinery. Anchors of various sizes were broken up in lengths, just as the pleasure of Mr. Nasmyth and the orders of the Captain Superintendent, with perfect ease—in some instances by one fall of the hammer; after which a part of the shank of an anchor, of about 30 cwt., was heated to a welding heat and beaten out by the hammer to a rod of about four inches in diameter. Here proof was given of the perfect control under which the inventor had the hammer in finishing off or rounding up. It was brought out from under the hammer, quite equal in finish as it would have been by the small forge hammer. The advantages to the government will be readily perceived, as they will now be enabled to break up the old rope and other condemned anchors, which can be converted to useful purposes. It may not be generally known, that most of the old anchors being charcoal iron a large quantity of superior iron will now be rendered available for her Majesty's service at a very great saving. In beating out iron for conversion, the blows are so powerful and effective that it drives out all spurious materials from the iron, and perfectly consolidates the whole mass; in proof of which, the four-inch rod was cut into various lengths and exhibited a beautiful specimen of solid metal, whilst the part of the shank that had not been under the hammer, showed nearly every bar and rod with which it had been made, except within about an inch of the outer surface. Mr. Nasmyth has orders to provide a patent steam hammer for each of her Majesty's dockyards.

IRON MAIL STEAM-PACKETS IN FRANCE.—We have alluded, in former Numbers, to the attempts now making by the French Government to increase their navy by the addition of a large number of iron steam-vessels, and some very extensive contracts have been offered to be entered into, on condition that should the Minister of Marine and Colonies accept the conditions offered, British cast-iron shall be admitted *free of duty*, for that express purpose only, which it is expected will be conceded by the Minister, as at present France has not the means of supplying material herself for so great a construction; and if the Government is determined to carry out this intention, it must import its iron from this country. The subject will soon be decided by the Chambers, the majority of the Members being strongly in favour of a general reduction on the entrance duty of English iron generally, whether wrought or cast metal, so as to enable the great projects and speculations contemplated to be carried out, without the slightest delay possible. Among them is that of establishing a direct line of mail iron steamers from the chief commercial ports of France, so as to afford a direct postal communication with Spain and Portugal, and to offer to England the advantages it will afford, by a direct line being established with the western coast of Africa, the adjacent isles in Europe and in Africa on this side of the Atlantic Ocean, besides which, with all the ports and islands of America, from the mouth of Mississippi, as far as the River Plata. The project has been submitted to the Minister of Finance, M. Theodore Lechevalier and other Members of the Chambers, who would willingly support the Government measures, and it has met with the general approbation of the Ministers of Marine, Commerce, and Finance. The subject will shortly be brought before the Chamber of Deputies, as a Council of delegates, many of whom are intimately connected with the Colonies and North and South America, are making their report and estimates, which will be presented to the Minister and the members of the different Chambers of Commerce in the leading sea-ports for their approval.

ATMOSPHERIC RAILWAY GAZETTE.

Proceedings of Public Companies.

MEETINGS DURING THE ENSUING WEEK.

MONDAY Hanson Mining Company—office, at Two.
Great West Williams—Stonehouse, at Ten.
London and Birmingham Railway—Euston Station, at Twelve.
London Commercial Sale Rooms—Institution, at Twelve.
TUESDAY United General Gas Light Company—office, at One.
Wheat Penny Mining Company—Sun Inn, Callington, at Twelve.
WEDNESDAY Souton Consols Mining Company—Globe Hotel, Plymouth, at Twelve.
THURSDAY New Brunswick and Nova Scotia Land Company—office, Twelve for One.
Provident Clerks' Mutual Benefit Association—London Tavern, at Six.
West London Railway—London Tavern, at One.
FRIDAY Wheal Formentor Mining Company—Tavistock, at Four.
Provident Life Assurance—office, at Two.
SATURDAY North American Colonial Association of Ireland—office, at One.

[The meetings of Mining Companies are inserted among the Mining Intelligence.]

CHURCH OF ENGLAND ASSURANCE.

The annual general meeting of the proprietors of this institution was held at the offices of the company, Lothbury, on Monday, the 2d instant.

WILLIAM SLOANE, Esq., took the chair on the occasion.

The report expressed the gratification of the directors at the increased prosperity of the institution. The new business of the past year had increased upwards of 26 per cent. over the new business of 1844, and 51 per cent. over that of 1843; and the premiums received had increased 38 per cent. over 1844, and 78 per cent. over those of 1843. The claims were far below the rate of mortality allowed by the tables; and the fire department had the same satisfactory result, as reported on previous occasions, with regard to the amount received from premiums, when compared with the amount of claims. It also alluded to the very large increase in assurances effected by the clergy, both in the life and fire departments; in the life department especially, the increase was upwards of 50 per cent., when compared with any previous year.

The four directors who retired (namely, James Lamb, Esq., the Rev. Thomas Robertson, Major Adair, and John Walker, Esq.), were re-elected unanimously; also the two auditors, R. S. Cahill, and John Berington, Esq.—The Rev. H. T. Tucker was elected a director, in the room of John Anderson, Esq., deceased.—The Very Rev. the Dean of Ely, and the Rev. Richard Wood, B.D., were elected additional directors.—A vote of thanks to the chairman, directors, and officers of the company, for their efficient discharge of their respective duties, was passed unanimously, when the meeting adjourned.

THAMES TUNNEL COMPANY.

The annual meeting of this company was held on Tuesday, the 3d inst., at the London Tavern—the chair was taken by B. HAWES, Esq.—Mr. CHARLIER read the advertisement convening the meeting, also the following

REPORT.

"Your directors in laying before you their annual report, have not any very particular observations to make with respect to the general state of your concerns.

The structure of the tunnel generally continues in the same substantial and satisfactory condition which it has done since it was completed, and its durability reflects great credit on the talents and judgment of Sir I. Brunel. One of the causes of constant expenditure in the management of the work is the influx of the land springs, which it has always been the opinion of Sir I. Brunel will eventually entirely cease; but during the last year there has been no observable diminution, although there has been no increase.

Our directors regret that during the past year, being the third since the tunnel was opened for foot passengers, there has been a still further decrease in the amount received for tolls, showing thereby that the number of persons who visited the tunnels as a work of art, and who did not merely use it as a passage across the river during the second year after it was opened, was larger than has been supposed. It is, however, still to be hoped that the amount received for tolls will not, during the next year, be again diminished, and of course the increase of the population and the improvements making in the neighbourhood are likely to increase the number of persons who will find the tunnel a convenient mode of thoroughfare. The effect of Juke's patent furnace, which had been applied to one of the boilers of the steam-engines, to which your directors adverted in their report last year, has been most satisfactory; the expenditure in coal being thereby so considerably reduced that it is calculated that the alteration has almost saved in coal the amount expended on it. Your directors have been compelled to lay out a portion of the amount last advanced to the company by the Commissioners for Public Works in a new section and rising main, for drawing the water out of the tunnel. The old pipe and main, which were in a very bad condition, are now under repair. When these improvements shall have been completed there will be two totally independent means of pumping out the water, so that should an accident occur to any part of the pumping apparatus there will always be another means of pumping ready, thereby preventing the possibility of the tunnel being flooded by any accidental obstruction. Several plans have been in contemplation for carrying a railway through the tunnel, but as yet your directors are not aware whether any of the contemplated schemes are likely to be carried into effect. Your directors will carefully watch your interests, should any scheme of the kind be likely to obtain the sanction of Parliament. It is to be hoped that such a plan, if carried into effect, would be of advantage to the interests of the Thames Tunnel proprietors; while, at the same time, the public would continue to have the use of the tunnel as a foot passage. It will be necessary to have your sanction to any scheme for a railway to pass through the tunnel, and therefore, if there is a probability of any one being carried into effect, you will have due notice to attend a special general meeting for that purpose.

Your directors deeply regret to state that Sir I. Brunel has for some months past been afflicted with a loss of health, which it is to be feared will render it impossible for him again to take any active share in your concerns. A great part of his time, during the last 10 years, has been devoted to the progress and completion of the works of the tunnel, and it must be a great satisfaction to him to see his exertions crowned with success in accomplishing a work which had been considered almost an impossibility.

Your directors have still the advantage of consulting the acting engineer, Mr. Page, whenever there may be occasion to do so, and from him they have always derived most efficient assistance. The usual statement of the receipts and expenditure for the year ending 31st December last, will be laid before you."

Mr. WINDAS asked what was the amount of debt and interest?

The CHAIRMAN said 250,000/., and there was about 50,000/ for interest, of which 14,000/ had been paid. He had an interview with the Commissioners of Public Works, who expressed a wish to show a favourable consideration for the proprietors in case of any purchase of the tunnel.—Mr. ADAMS spoke in relation to the accounts, and suggested an improved method of keeping them.—The CHAIRMAN was sorry to inform them of the extreme debility of their eminent engineer, Sir I. Brunel, who, notwithstanding, gave the greatest attention to the work of the tunnel—the reports of which were brought to him regularly.—After the election of Sir Alex. Creighton and Mr. Hawes, the meeting separated.

BRITISH COLONIAL BANK AND LOAN COMPANY.

The fifth annual meeting of this company was held at the bank, Moorgate-street, on Wednesday, the 5th instant.—JAMES STEWART, Esq., presided.

The MANAGER (Mr. J. R. Holloway) read the advertisement, and the following REPORT.

The directors have much pleasure in laying before the shareholders their fifth annual report. They believe that the depression under which the colony of New South Wales has for some time laboured, is, as they ventured to hope in their last report, gradually disappearing, and that, with the returning prosperity of the colony, the prospects of this company may be expected considerably to revive. Since the last annual meeting on the 5th of March last, the accounts of the company have been audited by the three auditors then appointed, and the balance sheet appended to the last report has been found to be correct; and in pursuance of a resolution of a general meeting of the shareholders on the 2d of July last, a dividend of 2/ per cent. on the capital stock of the company was declared. Since the last general meeting, a reduction of the liabilities of the company has been made, to the extent of 4100/ to the 31st December last, and since the closing of the year's accounts a further reduction of 5300/ has been effected, making a total of 9400/; and all the other debts affecting and assets of the company are in a state of settlement. The expenses of the company would have been further reduced, had not the law charges in the colony, incurred in foreclosing the mortgages, considerably increased them. The directors, however, consider that the obtaining the lands foreclosed will be of ultimate benefit to the company. The call made on the 2d October last, has been met in a very satisfactory manner. The directors have to express their great regret at the death of their late respected chairman, Sir HERBERT COMPTON. The following directors, according to the deed of settlement, retire from the direction, but, being eligible, hereby offer themselves for re-election, viz.—Sir FRANCIS SHUCKBURGH, Bart., Colonel Sir WILLIAM GOWER, and JOHN SHEWELL, Esq. The receipts of interest and rent are small, but, looking to the general state and prospects of the company, they will, in the opinion of the directors, justify the declaration of a small dividend.

From the statement of accounts to 31st Dec., 1845, submitted by the directors to the meeting, it appeared, that the entire paid up capital of the company was 190,465/ 1s. 8d.; total liabilities, British and colonial, 19,636/ 2s. 4d.; balance of profit and loss carried to credit of next account 2394/ 4s. 1d.—total, Dr., 212,495/ 8s. 1d. On the Cr. side, there were, for proportion of preliminary expenses, 4800/; advances on colonial stock, with interest, 14,586/; loans, 184,978/ 12s. 6d.; cash in hand, 5551/ 10s. 10d.; and bills receivable in Sidney, 2791/ 5s. 7d.—total, as above, 212,495/ 8s. 1d. From the profit and loss account, it appeared, that the total profit for the year was 12,304/ 4s. 2d.; from which was paid, for current expenses in London and Sidney, 4812/ 1s. 4d.; dividends, 3182/; losses on bills in Sidney and interest, 2415/ 1s. 11d.; and balance of profit carried to next account, 2394/ 4s. 1d.

The CHAIRMAN said, that he would move the adoption of the report, and, in doing so, would commence the few observations he had to make, by an expression of the great regret which the directors felt, and in which, he dare say, all the shareholders would participate, at the severe loss they had sustained in their late chairman, Sir Herbert Compton. He was sure that all who knew that gentleman would agree with him, that his memory must always be respected, for he was a steady and faithful friend to that company, and had always exhibited himself as such by his purse and advice. He thought it his duty to say this much in favour of their late excellent chairman. With respect to the position of the company, he was happy to say that he did think much more favourable of it than he ever did before. Though they had not so much in receipts as they had in the last year, yet he thought as much had been done as could reasonably have been expected under the circumstances. The amount of loans at 7/ per cent. was 50,000/ which was not likely to be foreclosed; and those foreclosed producing a rental, were to the extent of 94,000/ Then there was a balance of 41,000/ which, by the last advices, was in the hands of the company, and unproductive. Now, as that part of the property was entirely unproductive, negotiations were going on for giving in exchange a proportionate amount of shares of the company for such entirely unproductive land. This he believed would be adopted to the extent of 66,800/ and shares of the company would be offered for this unproductive land. These sort of negotiations were to go on, and he hoped that the shareholders would be satisfied with the arrangement.

With the great increase in the value of land, and the great increase in the value of the company, he hoped that the shareholders would be satisfied with the arrangement.

tions, he thought, would be carried to a very considerable advantage to the company. The 50,000/ lent at interest, at 7/ per cent., produced 2750/; and the 94,000/ at the rental, if maintained, would produce 3500/ more. Supposing the unproductive property was set down at 750/ he might say that their receipts, according to the last calculation, in next year would thus altogether be 8000/. He thought he made that statement at the last meeting; and, if so, they would see by the balance-sheet that it had been nearly realised. By the next advices, about 1500/ would have to be raised previous to the 30th of June last; therefore, that amount of 8000/ would be pretty nearly made up. He had not overstated their receipts for next year, when he stated them at 8000/; indeed, he had a strong opinion that there would be a larger amount received. At the last meeting, he found that it was stated that the expenses both here and abroad would be about 3000/; he now could say, that the company would have been carried on for less, had it not been for the large law expenses incurred in foreclosing the mortgages, which amounted to 1000/. There would, of course, be no expenses of this sort every year; but yet they should not be regretted, because by possessing the lands in this way, they could recover back all or part of their money. It would be seen, that they had already paid off the debt of 9400/; and they proposed to pay off a further debt of 5000/. A reduction in interest of 1000/ would, consequently, take place (hear, hear). In corroboration of his statements, the CHAIRMAN read a letter from the manager in Sidney, which was favourably received, and concluded by expressing himself ready to afford any information that might be required.

After the adoption of the report had been moved and seconded.

Mr. MASON made a long speech, in respect to the justice of giving to his repudiated scrip the value of the present shares of the company.—A PROPHETOR said, that gentleman had the usual period for exchanging the scrip as well as others, and he did not see why he should be favoured to that extent.—The CHAIRMAN said, the question had been at rest three years ago, the particulars of which, if necessary, he would read to the meeting. (No, no.) Mr. COOK also endeavoured to read a letter on the same subject; but, as he was not a registered shareholder, he was not allowed to speak on the subject.

The matter then dropped, when, on the motion of the CHAIRMAN, seconded by Mr. SMITH, the report was adopted unanimously.

Mr. JACKSON moved, and Mr. RHODES seconded, the re-election of Sir Francis Shuckburgh, Bart., Col. Sir William Gossett, and John Showell, Esq., as directors of the company, which motion was passed unanimously.

Mr. CUMMING moved a vote of thanks to the chairman and directors, which was agreed to unanimously.—The CHAIRMAN returned thanks and said, they would give their best attention to carry on the affairs of the company in a successful manner, and, in doing so, they should always, as they had done hitherto, be happy to listen to any expression of opinion from the general body of shareholders. (Applause.) The meeting then separated.

LONDON AND OXFORD RAILWAY.

This proposed line of railway from London to Oxford direct, originally came out under the name of the London, Oxford, Cheltenham, Gloucester, and Hereford Railway; and was intended to afford a cheaper, more advantageous, as well as more direct, communication between the metropolis and the west of England and South Wales. The expenses of the undertaking were estimated at 2,500,000/., the deposit being 17. 7s. 6d. per share, of 25/- each. The evident excellence of the line soon recommended itself to the noblemen, landlords, and other influential gentlemen, interested in the three counties through which it was to pass, of whom we may mention the Right Hon. Earl of Orkney, Viscount Loftus, M.P., Lord Northwick, Lord Dunleavy, Lord Sudeley, Sir Edwin Pearson, &c.; and the inhabitants and authorities of the different towns through which it was intended to carry it, were unanimously in its favour. In deference, however, to the proprietors of the Great Western Railway, and in order to remove as many as possible of the objections which that company might entertain towards the above undertaking, the managers resolved not to carry the line to Cheltenham and Hereford, but to make their terminus at Oxford. The railway, as originally proposed, would have been in length 126 miles, from London to Hereford; and there would have been a saving of no less than 30 miles over the existing railway communication in the distance (92 miles), between London and Cheltenham. At the latter place, the projectors intended to adopt the Birmingham and Gloucester Railway, and, from Gloucester, to proceed by Ledbury to Hereford, where it would join the projected Welsh Midland and Newport, Abergavenny and Hereford Railways—thus affording a direct communication from London, not only to the counties of Buckingham, Oxford, and Gloucester, but to the important districts in Monmouthshire and South Wales; while, in addition to these incalculable advantages, it would afford the most direct route to the south of Ireland. The London and Oxford Railway is proposed to commence at a point of junction with the London and Birmingham Railway, about seven miles from the Euston-square station; and, following the course of the Brent Valley to Greenford, will proceed by or near Hayes, Uxbridge, Beaconsfield, High Wycombe, and Thame, to Oxford. The entire length of the line will be about 52 miles—thus saving in distance upwards of 10 miles upon the present mode of communication. As the railway will pass through a tract of country, to which at present there is no convenient means for the transit of goods and passengers, and from the impetus traffic in agricultural and manufacturing productions which is carried on between London and the different towns with which it will communicate, independently of forming subsequently the great trunk line from the metropolis to the mining and manufacturing districts in the north-west—thereby eventually insuring an incalculable amount of traffic—there can be no doubt as to the undertaking affording the shareholders a most profitable investment for their capital, returning, at least, an equal per centage to that of the two great lines on either side.

To the farmers of the counties of Buckingham, Gloucester, and Oxford, this communication with the metropolis will afford vast advantages—inasmuch as, from the interior of these counties, they are very deficient at present of the means of transmitting their produce quickly and cheaply to the different markets. Now that the corn laws are to be doomed, and, consequently, the English farmer left without protection in but a short period, nothing, we can conceive, will better enable him to fight the battle of competition with his foreign rivals in the market, and preserve him from sinking in the troubled waters, than direct, rapid, and cheap communication; and this will most assuredly be effected by the London and Oxford Railway for the farmers in the districts we have mentioned, and enable them to transmit their produce at a comparatively nominal expense to Mark-lane, and the important corn market at Uxbridge, which, of itself, at the present time consumes upwards of 3000 quarters. We have not the least doubt, therefore, that, when made acquainted with the advantages of the undertaking, the great influence of the vast body of agriculturalists will be directed in its favour—supposition in which we are evidently borne out by the number of names attached to the different petitions now in course of signature. The whole of the preliminary business, and the necessary deposits, required by the Board of Trade, have been complied with; and we understand, that the company will not only have the support of many members in the Upper and Lower House, but will be favourably entertained by Government. Some time ago, we may mention, as a proof of the estimation in which the line is held, a meeting took place at Uxbridge.—Dr. BEASLEY in the chair,—at which it was unanimously resolved, notwithstanding there being no less than 11 different projects brought before the meeting, and great opposition on the part of the Great Western Company (who propose a short line from Uxbridge, to form a junction with their trunk line at West Drayton). That no railroad will meet the wishes or consult the interests of the town of Uxbridge, which does not open a direct communication with Buckingham and Oxfordshire; and that cross or junction lines, in addition to a trunk line, and having stations at Uxbridge, will materially assist the trade and traffic of the town.—There have been various meetings in favour of the line during the last week, and the first was

MEETING AT WYCOMBE, which was held in the Town Hall of that place, on Friday, the 27th ult., to consider which of the proposed lines of railway would be most beneficial to the town.—The MAYOR in the chair.—The meeting was most numerously attended by the inhabitants and influential parties in the town and neighbourhood.—Several gentlemen addressed the assembly on the advantages of the London and Oxford Line, when a rather stormy discussion ensued as to whether that line, or the "short line," would be most advisable to adopt.—Mr. PALLMEE (who, says the *Windsor and Eton Express*, "caused great amusement by the lofty manner in which he defended the Great Western Company"), addressed the meeting at great length on the advantages which he conceived might be derived from a branch from Wycombe to the trunk line of the company to which he belonged; but, on the CHAIRMAN putting the different propositions to the meeting, there appeared only six hands for the "short line," or Great Western Junction; and the body of the crowded meeting declared in favour of the "long line," or London and Oxford.

MEETING AT UXBRIDGE.—In consequence of a requisition, signed by a large number of the most influential bankers, traders, and inhabitants, requesting the lords in trust of the manor and borough of Uxbridge "to convene an early meeting of the inhabitants of the town and its vicinity, to take into consideration the propriety of petitioning Parliament in favour of the intended railway from London to Oxford, and to adopt such measures in support of the same as may be deemed expedient," a meeting was held in the Public Room of that place, on Wednesday last, the 4th inst.—On the motion of HENRY HULL, Esq., seconded by T. BEASLEY, Esq., LL.D., Uxbridge.—DANIEL RUTTER, Esq., took the chair.—The CHAIRMAN read the advertisement calling the meeting, and said that, before he called upon the gentlemen who would propose and second the different resolutions which would be submitted for the approval of those present, he could not allow this opportunity to pass without expressing his gratitude for the honour which they had conferred upon him. He was sure there were many present who would have illumed more than he could do to the position to which he had been elected. He had always taken a great interest in the proposed line, and could foresee many advantages which would accrue from its adoption, both to this town and the large agricultural district through which it would pass; and, consequently, he had given it his entire support, and was determined to persevere, in order, if possible, to carry the subject to the fullest extent. He would not occupy the time of the meeting by his

monologue, but would call upon the gentleman who was to propose the first resolution.—Dr. BEASLEY then rose and said:—Gentlemen, I have already been chairman at two of your meetings, and said so much on the subject of railways, that I am sure any lengthened remarks of mine would be distasteful to you, and a waste of time. (Oh! Oh!) Yet, I cannot help reverting to the unanimity which has, from the commencement, prevailed among us, upon this important matter. In proof of this, I need only refer you to the excellent meetings which have already taken place in favour of this line, where so much unanimity of feeling prevailed. I must confess that I am not at all an advocate for railways; but, since we are to have them, let us have those that afford the best and cheapest, and most direct communication. The traders in this district were not to submit to the usurpation of the whole traffic by the Great Western Company, when they could get a means of conveyance for their goods, which would not only be less expensive, but afford greater security and facility. I have great pleasure in proposing the following resolution, which, without any more remarks, I will read to the meeting:—"That the proposed railway, from London to Oxford, if completed, will afford to the inhabitants of Uxbridge, an immediate communication with London and Oxford, and the north-west of England."—T. H. RICHES, Esq., seconded the motion. He sympathised with the sentiments expressed by the speakers on this occasion. The proposed railway had been first in the field of all the different projects, which had been suggested, and brought before their notice. The Great Western, however, claimed the precedence; he very much doubted the justice of that claim, and called upon them to prove the truth of that statement. That company had already about 400 miles of railway in existence, and he could not conceive why they should be so monopolising and unfair as to raise any opposition to the inhabitants of Uxbridge, and the agriculturists of Buckingham and Oxfordshires, and the different interests therewith connected, having a direct and cheap line to carry their goods to market. He cordially seconded the motion proposed by his respected friend.—On the motion being put from the chair, it was carried unanimously.—H. HULL, Esq. (one of the greatest corn dealers and flour merchants in Uxbridge), after reading the second resolution, said:—In consequence of my being so largely connected with the corn trade—the staple industry of this town—it will no doubt be expected, that I should say something relative to the proposed line of railway, from London to Oxford direct. The resolution which has been put into my hand, utters a fact; the truth of which I have individually felt (hear, hear). The trade of Uxbridge has, indeed, dwindled away; and that simply from the want of means of transit. The opposition line has carried a great part of our traffic in another direction; but to think of taking wheat to Maidenhead, was like importing coal to Newcastle (laughter). What the town of Uxbridge required, was a direct communication, not only with London, but with the interior of the two counties of Buckingham and Oxford. Now, the entire quantity of wheat required to supply our market, was upwards of 3000 quarters; but of this quantity we are only able to procure 1000 quarters, and that even at unnecessary expense. Thus are we left to provide, as we best may, at a considerable cost, the remaining 2000 quarters necessary for our consumption. It was a well-known fact, that Uxbridge was one of the best market towns in England, and the wheat there was not only of a superior quality, but brought among the highest prices of any in the kingdom. Are we, then, to submit to see our trade dwindle, and our expenses unnecessarily great, when we have the means in our power of resuscitating the one, and averting the other? Independently of the direct and quick transit offered by the London and Oxford Railway, if completed, I firmly believe that, in the expenses, we shall at least save one-half of the present charge of carriage. Now, a statement which I made in regard to coals, at another meeting, was called in question by some coal brokers; and, not having any authority with me, I was unable to convince them of its correctness. At present, several gentlemen were paying the enormous price of 45/- per ton for coal, and all on account of the immense charge for carriage; but, with the London and Oxford Line, they would be enabled to procure the best Wall's End at 21s. 3d.—thus effecting a great saving on that important article of consumption. The freight to Uxbridge would be 8s.; the commission would be 6d.; loading into the trucks, ex-barge, 9d.; 12 miles at 1d. per ton per mile, gives the expense at 5s. 3d.—while now is, per ton per mile, was paid for cartage alone. Again, the conveyance of coals from Maidenhead to London (30 miles), which was now 7s. 6d. freight, 2s. for cost, and 1s. for truck—total, 10s. 6d.—could be accomplished by the London and Oxford for 1s. 9d. It is very important, that this town should be supplied with coal at as cheap a cost as possible; essential alike for the comfort and welfare of the inhabitants, as the prosperity of the trade and town of Uxbridge. I will now conclude my remarks by stating that, at the meeting at Wycombe, notwithstanding the means of the company had sent a barrier down to oppose this

Western trunk to Uxbridge and Wycombe. The former resembled going to Newcastle by Liverpool; while the London and Oxford travelled through a district without any means of communication, entirely unrepresented by railways, and thereby divested of the very essence of prosperity,—and also rendered the most direct possible line from one terminus to the other. Could it be supposed that the county of Buckingham—one of the largest and most fertile agricultural counties in England—and those, too, of Oxford and Gloucester—were any longer to remain in that deplorable condition? They had the means of bettering their condition, and they would use it. In no part of the United Kingdom would be found people more industrious than in Buckingham, and fair in their dealings with others. This could especially be said of Uxbridge,—to which town, the strict honesty of the large and influential body of members of the Society of Friends there, in their transactions and bargains with their neighbours, had gained a just celebrity. (Hear, hear.) That town itself had an immense traffic, but it was decidedly on the wane. He could recollect, when (many years ago) he resided in it, of the numerous coaches that came rattling along its streets, and were to be found at all hours at its inns—indicative at once of its prosperity; but where are they now? The traffic was diverted into another channel, from want of railway accommodation; and what should cause by Uxbridge, now went by the Great Western Railway. He wanted to restore the town to its wonted activity and prosperity. It was entirely with the view of benefitting the different districts through which it would pass, that he supported the line; for, divest of this object, it was no matter to him whichever way the matter was settled—whether it was decided upon having the "short line" (Great Western project), or the "long line" (London and Oxford). He believed the interest upon the capital would, at least, be 12 per cent. Now, there was another object decided in their favour. Economy was unquestionably the principal aim, at the present time, in the construction of lines of railway; and he could assure them, that his chief desire had been to lessen their expenses as much as was in his power. (Cheers.) From the level country, and the absence of tunnelling—the prevention of which had been a great desideratum with the managers—the London and Oxford line would not be more than one-half the expense of many of those already constructed throughout the kingdom, and, at the same time, possess all the facilities and safety afforded by the most improved system. (Hear, hear, hear, hear.) This was an advantage which would be alike beneficial to the shareholders and the public at large. It was now a generally admitted fact, that the agriculturists would have to suffer a severe trial; and they would require their produce conveyed to market as quickly and cheaply as possible. But he had no fear of the agricultural interest, if it took advantage of the immense opportunities now afforded; and the farmers of Buckinghamshire, by the facilities of the London and Oxford line, might convert the present age of iron into a golden age. The right hon. and gallant captain resumed his seat amidst great applause.—In answer to a question, Capt. FITZMAURICE said—it was contemplated to have the station at Page's-lane; but in that, as well as all other matters, the convenience of the inhabitants would entirely influence the decision of the directors.—Mr. WESTRICK then proposed—"That a petition, embodying the substance of the aforesaid resolution, be submitted for signature, and presented to the House of Commons,"—which, being seconded by Mr. HATHAWAY, was passed unanimously.—Dr. BEASLEY: In reference to a remark made at an early period of this meeting, I may say, that although it was denied by the Great Western Company, that our line was first before the public, yet it could not be disputed. The fact was, that when our scheme was made known, then, but not till then, did that company discover that they had, either in their pockets, or locked up in a desk—it was little matter which—another proposition, for connecting Uxbridge and Wycombe, by means of "shortlines," with their trunk.—Mr. HERRON proposed that the petition just read, be adopted, and signed by the meeting; and at the suggestion of Mr. HULL, that G. Byng, Esq. M.P. for the county, be requested to present the same to the House of Commons, and support its prayer,—and that Capt. Fitzmaurice be requested also to give it his support.—Captain FITZMAURICE begged leave to second the motion. He would always feel it a pleasure, as well as a duty, in or out of the House, to give the project his entire support.—Captain FITZMAURICE then proposed, in a brief but compliment speech to the chairman, a vote of thanks to Mr. Rutter, for his excellent and able conduct in the chair,—which was seconded by Sir EDWIN PEARSON, and carried by acclamation.—After attaching their names to the petition, the meeting separated.

MEETING AT PRINCES RIBBOROUGH.—A meeting, called by advertisement, of the landowners, farmers, and others, in Princes Ribborough, was held in the large room of the Cross Keys there, on Thursday last, the 5th inst., to take into consideration the intended railway from London to Oxford, and adopting such measures in support of the same as might be deemed expedient.—Sir GEORGE STEPHEN, of Collins, in the chair.—The CHAIRMAN, after stating the objects of the meeting, said that he wished, before proceeding to business, to ask several questions at the gentlemen whom he observed were present from the board of direction, in order to elicit answers which might satisfy him and the meeting if the plan proposed by the managers were such as to insure every advantage to that district of the county. There could be no doubt existing in the minds of those who were acquainted with the nature of their communication with the surrounding district and the metropolis, and the many inconveniences and losses to which the farmers were subjected to, to the great necessity of having the present line carried out. He did not know any portion of the country worse accommodated than they were; and before he could avail himself of the benefits of railway travelling, he had to drive 15 miles on the one hand, and 13 on the other. But, although the London and Oxford Line were carried out, it was quite possible that he and his neighbours might be subjected to inconveniences of a nature not much less tolerable than those with which at present they had to contend. They all knew, from experience, that their representatives in Parliament appeared all they could desire on the hustings—they were lavish in their promises, and smooth in their dealings, when soliciting their suffrages; but no sooner were they elected, than their plan of procedure was changed, and they forgot the resolutions to which they had previously come.—(Hear, hear.) Such, he was sorry to state, might also be said in reference to railway directors—once installed in office, and the wants of the public, and even the shareholders, were little cared for, and often shamefully neglected. It was a well-known fact, that in 9 cases out of 10, in the existing railways, small stations were greatly overlooked; and, however conscious he was of the necessity of this railway being carried out, yet they ought to make sure of all the intermediate stations, receiving equal attention from the directors. The question he meant to ask was, whether there would be a first-class station at Princes Ribborough? He thought they ought at least to secure them two first-class trains. He also wished to be informed, if the fares of the London and Oxford would be at the same rate as the generality of railways? Now, it was universally felt that railway companies, while they paid particular attention to the first-class carriages—making them as easy and comfortable as possible; they entirely neglected those of the second and third class. He had experienced the exposure to which they were subjected in the second-class carriages. In the Great Western Railway, one of the second-class carriages, in which he was travelling, with a Member of Parliament and a lady, was actually full of water; at each station they came to, they begged the servants of the company either to allow them to remove to another carriage, or to oblige them with mats, to keep them from the wet, but the answer with which they invariably met, was—"Don't you wish you may get it?" He complained to the directors on the subject, but they never so much as replied; he wrote them, but received no answer; and at last he addressed a letter to the Editor of the *Times*, which, having appeared in that Journal, he believed resulted in the improvement of those carriages. He knew the exceeding difficulty in getting the directors to accede to requests when once in office; and, in two cases in which robberies of valuable property were committed on him and a friend of his, on the Great Western Line—and he believed by the servants, too—having written to the directors, he could receive no reply nor satisfaction on the subject. Now, he would like to see the different towns and intermediate stations represented at the board, for a little leaven would leaven the whole lump. He would propose that a clause in the Act should be introduced, securing the election of four directors from Uxbridge, Wycombe, Thame, and Princes Ribborough. In order to effect this, it would be requisite to reduce the necessary qualification, and he considered 25 shares would be quite sufficient to entitle a shareholder to sit at the board of direction. He hoped the meeting would see the necessity of adopting this clause.—The Deputation, on the part of the direction, said, that it would always be the interest of the managers to secure the interest of the shareholders and the public. Now, in regard to the intermediate stations being attended to, they would be of the first importance, as their principal traffic would be from the agricultural districts, conveying their produce to the different markets. They did not depend much on the through traffic, nor did they rely on it to any great extent. There would be, they had no doubt, several first-class trains a day stopping at Ribborough; they could not at present state definitely the number, but they might, at least, rely on two. Of course, express trains would not stop at the intermediate stations; for as they would have to compete with the Great Western, it would be impossible for them to effect any such arrangement, if they wished to accomplish the distance in a shorter time than their rival. The fares would certainly be at the same rate as others; but, in case of competition, if the fares of the other company were reduced, they would have to do the same. In regard to the observations of the respected chairman, they would assure them that the second and third-class carriages would be second to none in the kingdom for convenience. Of course, the Act of Parliament provided that the latter should be covered in; and it would be the object of the directors to make the poor man's carriage as comfortable as possible. They had no objection to the clause being introduced into the petition, but were afraid it would not be entertained by the committee. In fact, there were many things which might prevent its effectual working—for instance, there might not be a shareholder in these four towns possessing the necessary qualification; and it would not be right that a person possessing one or two shares should have the same privilege as one possessing 50 or upwards. At the same time the county Members were on the direction, who would always do that which would secure the good of their constituents.—The CHAIRMAN expressed himself satisfied with the answers to his questions, but still hoped the meeting would adopt the clause in their petition. He called upon any gentleman present who had a resolution to propose, now to do so.—HARRY GIBSONS, Esq., moved—"That it is the opinion of this meeting, that the proposed railway from London to Oxford is calculated to benefit this town and neighbourhood, by affording a cheap and expeditious means of conveyance for the staple commodities of corn, cattle, and chairs, from this locality, and of supplying the inhabitants with a means of obtaining cheap fuel from the coal districts, and also a direct communication with the two cities of London and Oxford;—and that this meeting pledges itself to support the proposed line by all means in its power." He was deeply impressed with the invaluable importance of a direct communication with this district. He had himself felt the great want of conveyance, and had often to travel a great way before he was able to procure the benefits of a railway. He was a large consumer of coal, and he had to cart, at considerable expense, all he required of that description of fuel. By the intended railway, he expected they would at least save 10s. per ton; and to the poor in this district, this would be fraught with the most beneficial results. The making of chairs was becoming a very extensive employment for the population of Ribborough, and it was daily increasing—he considered that industry, by which so many earn their own and their families' livelihood, as merely in its infancy. The direct communication with the north, west, and south, would soon establish a lasting trade in the neighbourhood; and he had no doubt of yet seeing Buckinghamshire a manufacturing, as well as agricultural, county. There were many other grounds on which he supported the London and Oxford Railway, for it would assist materially the farmer to compete with his rival, by giving to him cheaper fuel, and cheaper means of transmitting his goods, and receiving what he required in return.

Mr. T. BAXTER seconded the motion in a brief speech, which, on being put from the chair, was carried unanimously.—J. GRACE, Esq., of Wardrobes, said, that if they did not get this line they would continue entirely destitute of communication, while other districts were enjoying the benefits of railways. He often had to go to Oxford, and, before he could get there, he had to go to Wycombe, and travel the country round. Beech was becoming very scarce now in Ribborough, and was to be had only at a very high rate, which almost prevented the poorer classes from getting that—the principal part of their fuel. By introducing coal at a much cheaper rate, it would enable the industrious labourer to purchase that article in place of wood. He then concluded by moving, "That a petition, embodying the substance of the aforesaid resolution, be submitted for signature, and presented to the House of Commons, and that the petition now read be adopted and signed by the meeting, and that R. R. Clayton, Esq., one of the members for the borough and hundreds of Aylesbury, be requested to present and support the same, and that the members for the county of Bucks be also requested to support the same."—The CHAIRMAN said, that about four years ago, Mr. Stevenson, the celebrated engineer, called upon him, and proposed a railway to be carried through this vale to Thame; and promised to procure contractors who would deliver coals at Ribborough, at 12s. 6d. per ton for 10 years.—Mr. JOHN CLARK asked, if it were intended to accommodate the intermediate stations with turn-tables? In many railways the farmers had to drive their cattle a great distance before they could get the accommodation. If there were not to be one at Ribborough, then the farmers in the district would have to drive their cattle to Wycombe, a distance of 19 miles.—T. BAXTER, Esq. said, that would be one of the principal things,

attend to.—The motion thereto, having been seconded, was carried unanimously.—A vote of thanks was then passed to Sir G. Stephen for his kindly offering to attend the meeting, and his able conduct in the chair.—The CHAIRMAN, in a brief speech, returned thanks, and the meeting separated.

At a meeting, held on Wednesday, of the town council at Wycombe, it was resolved all but unanimously, to support the London and Oxford Line, there being only two dissentients.—A. Wheeler, Esq., chairman of the "short line," or Great Western Branch, and Mr. G. L. Parker, brother of one of the solicitors of the "short line."

BRISTOL AND EXETER RAILWAY.—The 19th half-yearly meeting was held at the White Lion Hotel Bristol, on Wednesday last, James Gibbs, Esq., Chairman of the Board of Directors, in the chair. The recent disputes between the directors and a portion of the proprietors seemed to give unusual interest to the meeting, and there was a considerable attendance. The secretary read the directors' report, of which the chief points are:—"That the income for the half year ending 18th November, was £6,582/-; the gross earnings on the line, during the year 1845, were nearly £90,000/-; that the directors recommend the usual half-yearly dividend of 12s. per share on the 15,000 whole shares free of income-tax; that the cost of the Crewkerne branch will be defrayed out of the capital authorised by the act of last session; that land for the branches to Clevedon, Tiverton, and Yeovil, is in the course of being purchased; that the construction of the branch to Wells is postponed; that the Exeter and Crediton line, under lease to the company, will be opened this year." A very lengthened discussion ensued as to the re-election of the retiring directors, Messrs. Wills and Morgan, the committee of united shareholders contending for an entirely new list, and the directors and their supporters advocating a list including the two retiring directors and five of those named by the committee. On a show of hands, the directors' list was declared to be carried.—A dividend of 12s. per share, free of income tax, was carried; and the resolution, confirming the agreement entered into by the directors for giving increased capital towards the Cornwall Railway, after some opposition, was agreed to.

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UNIVERSAL GAS LIGHT COMPANY.—CONTRACTS TAKEN for LIGHTING UP, with a SUPERIOR GAS, and at a REDUCED RATE—towns, villages, lighthouses, dockyards, hospitals, theatres, public offices, manufactorys, printing-offices, prisons, barracks, railway stations, asylums, schools, and other large buildings, where the ordinary gas is not accessible.—Letters to be addressed to Mr. William Nicholson, secretary, 159, Drury-lane.

PATENT IMPROVEMENTS IN CHRONOMETERS.

WATCHES, AND CLOCKS.—E. J. DENT, 82, Strand, and 33, Cockspur-street, watch and clock maker, BY APPOINTMENT, to the Queen and his Royal Highness Prince Albert, begs to acquaint the public, that the manufacture of his chronometers, watches, and clocks, is secured by three separate patents, respectively granted in 1836, 1840, 1842. Silver lever watches, jewelled in four holes, 6 gs. each; in gold cases, from £8 to £10 extra. Gold horizontal watches, with gold dialls, from 8s. 6d. to 12s. each. DENT'S PATENT DIPLOMOSCOPE, or meridian instrument, is now ready for delivery. Pamphlets containing a description and directions for its use is, each, but to customers gratis.

TO ENGINEERS, RAILWAY CONTRACTORS, MINING AGENTS, IRONMASTERS, AND OTHERS REQUIRING FINE GREASE FOR MACHINERY AND AXLES of every description.—JOSEPH PERGOVIL'S IMPROVED ANTI-FRICTION GREASE is—after trials on machinery and axles of every kind where constant friction is kept up—admitted to be the most useful, economical, and best preventive of the kind ever offered to the public.

Reference to scientific and practical men can be given, and testimonials shown of its great excellence.—Samples forwarded on application at the manufactory, Green-street, Wellington-street, Blackfriars-road, London.

Country Members were on the direction, who would always do that which would secure the good of their constituents.—The CHAIRMAN expressed himself satisfied with the answers to his questions, but still hoped the meeting would adopt the clause in their petition. He called upon any gentleman present who had a resolution to propose, now to do so.—HARRY GIBSONS, Esq., moved—"That it is the opinion of this meeting, that the proposed railway from London to Oxford is calculated to benefit this town and neighbourhood, by affording a cheap and expeditious means of conveyance for the staple commodities of corn, cattle, and chairs, from this locality, and of supplying the inhabitants with a means of obtaining cheap fuel from the coal districts, and also a direct communication with the two cities of London and Oxford;—and that this meeting pledges itself to support the proposed line by all means in its power." He was deeply impressed with the invaluable importance of a direct communication with this district. He had himself felt the great want of conveyance, and had often to travel a great way before he was able to procure the benefits of a railway. He was a large consumer of coal, and he had to cart, at considerable expense, all he required of that description of fuel. By the intended railway, he expected they would at least save 10s. per ton; and to the poor in this district, this would be fraught with the most beneficial results. The making of chairs was becoming a very extensive employment for the population of Ribborough, and it was daily increasing—he considered that industry, by which so many earn their own and their families' livelihood, as merely in its infancy. The direct communication with the north, west, and south, would soon establish a lasting trade in the neighbourhood; and he had no doubt of yet seeing Buckinghamshire a manufacturing, as well as agricultural, county. There were many other grounds on which he supported the London and Oxford Railway, for it would assist materially the farmer to compete with his rival, by giving to him cheaper fuel, and cheaper means of transmitting his goods, and receiving what he required in return.

Mr. T. BAXTER seconded the motion in a brief speech, which, on being put from the chair, was carried unanimously.—J. GRACE, Esq., of Wardrobes, said, that if they did not get this line they would continue entirely destitute of communication, while other districts were enjoying the benefits of railways. He often had to go to Oxford, and, before he could get there, he had to go to Wycombe, and travel the country round. Beech was becoming very scarce now in Ribborough, and was to be had only at a very high rate, which almost prevented the poorer classes from getting that—the principal part of their fuel. By introducing coal at a much cheaper rate, it would enable the industrious labourer to purchase that article in place of wood. He then concluded by moving, "That a petition, embodying the substance of the aforesaid resolution, be submitted for signature, and presented to the House of Commons, and that the members for the borough and hundreds of Aylesbury be requested to present and support the same, and that the members for the county of Bucks be also requested to support the same."—The CHAIRMAN said, that about four years ago, Mr. Stevenson, the celebrated engineer, called upon him, and proposed a railway to be carried through this vale to Thame; and promised to procure contractors who would deliver coals at Ribborough, at 12s. 6d. per ton for 10 years.—Mr. JOHN CLARK asked, if it were intended to accommodate the intermediate stations with turn-tables? In many railways the farmers had to drive their cattle a great distance before they could get the accommodation. If there were not to be one at Ribborough, then the farmers in the district would have to drive their cattle to Wycombe, a distance of 19 miles.—T. BAXTER, Esq. said, that would be one of the principal things,

ATMOSPHERIC RAILWAYS.

TO RAILWAY COMPANIES, ENGINEERS, MANUFACTURERS, IRONMASTERS, AND TO ALL OTHERS WHOM IT MAY CONCERN.

NOTICE is hereby given, that the Atmospheric System, included to be adopted on the Croydon line, is, nevertheless (although practicable), of a crude and imperfect one of Mr. PINKUS's several systems, and involves an unnecessarily large outlay of capital in the construction, and an unnecessarily heavy expenditure in the annual working thereof; whilst, by PINKUS's new Systems, only about one-half, yet affording the required amount of propelling power, is dispensed with, and the loss by leakage thereof is prevented—one line of pipe suffices for a double line of railway; each train is made to move under the influence of two stationary engines, at the termini of a section, simultaneously, by which means the amount of motive power is reduced by one-half, yet affording the required amount of propelling power. The stationary engines work constantly, husbanding power at intervals, when trains are not moving, thus inducing much economy. The propelling main is reduced in size, to one-half the capacity required by the former system; yet affording the same amount of propelling power. Trains may be more frequently moved, and with out danger. And by a further system (being the Atmospheric Locomotive), one line of pipe suffices for a double line of railway; the train, as before-mentioned, moves under the influence of two stationary engines at the termini of a section simultaneously; a column of air in the pipe does not move with the velocity of the train; the immense loss of power consequent upon friction of air moving rapidly in the tube, is thus avoided; the quantity of air acted upon for an equal amount of propelling power, is only a fifth part of the quantity necessary by the former system—equal flexibility with the common steam locomotive system is obtained, the locomotive engines being capable of moving forwards and backwards, as by the steam locomotives, more frequent trains may be moved without loss of time, and without waiting for the re-adjustment of the propelling tube, the power of the locomotive is greatly increased on inclined planes, and perfect safety, from the possibility of a train moving off the rails is secured.—These are advantages which PINKUS's other first system, about to be used on the Croydon Line, does not possess.

Licences will be granted, and information may be obtained, on application to the Secretary, at the Atmospheric Railway Offices, West Strand, Trafalgar-square, London.

Communications addressed to Mr. Alfred Gregory, Sec. pro tem.

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